NSW SCHOOL PHYSICAL ACTIVITY AND NUTRITION SURVEY (SPANS) 2015

FULL REPORT

NSW GOVERNMENT | Health

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The NSW Ministry of Health commissioned the Physical Activity Nutrition and Research Group, Prevention Research Collaboration, University of Sydney, to undertake the Schools Physical Activity and Nutrition Survey as an independent study and prepare this report.

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THANK YOU

SPANS 2015 is the fifth monitoring survey of NSW school children's weight and weight related behaviours. The undertaking of this representative population survey of 7,556 children across NSW in years K, 2, 4, 6, 8, and 10 involved many individuals and their valuable contributions were greatly appreciated in ensuring the professional conduct of the survey.

Trudy Fernan was outstanding in her role as SPANS Coordinator ensuring that all the many aspects involved in undertaking a large population surveillance survey across NSW were done seamlessly and professionally.

Tricia Gleeson, Erika Bohn-Goldbaum and Belinda von Hofe were outstanding in their roles as school recruitment officers and maintaining contact with the schools' liaison teachers. They completed these tasks with the highest level of professionalism and competency.

The field teams were an extremely dedicated group of seconded and new graduate teachers. They collected the data with the utmost attention to detail, often under very trying conditions and seldom resting during the day. Their rapport with schools and teachers was most professional and caring. They often had to travel long distances and worked many hours above and beyond a normal school day.

The participating schools and their staff were most supportive of the study, accommodating our requests and the disruptions to their timetables. We appreciated the way they made the field teams and researchers welcome and a part of each school.

Finally, thank you to the parents of children in kindergarten, years 2 and 4 for completing the survey questionnaire and to all the students involved.

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How to read this report

The report summarises the weight and weight related behaviours of a representative sample of NSW children age 5-16 years old for 2015, and where available for 2010 for comparison. All results presented in the report are *weighted* so that they are representative of the total NSW population of children age 5-16 years.

Prevalence data and associated standard errors are presented as crude rates within text, tables and graphs and the results are presented by school level (primary and secondary) year group (Years K (kindergarten), 2, 4 and 6 for primary school and Years 8 and 10 for secondary school), sex (all, boys and girls), locality (urban (reference group) and rural), socioeconomic tertile (low, middle and high (reference group), cultural background (English-speaking (reference group), Asian, European and Middle Eastern), and body mass index category (thin, healthy weight (reference group), overweight, obese). A brief description of the indicator is given as a title for each graph or table.

Where possible, significant differences in 2015 between boys and girls within each year group are presented and notated with the letter 'a' and when available the difference in proportions between 2010 and 2015 are presented and significant differences notated with the letter '*b*'.

Reading tables

Table 4.7 Prevalence of waist-to-height ratio ≥0.5 among adolescents in secondary school by sex and year group in 2015 and, in 2010 for comparison (%, SE)

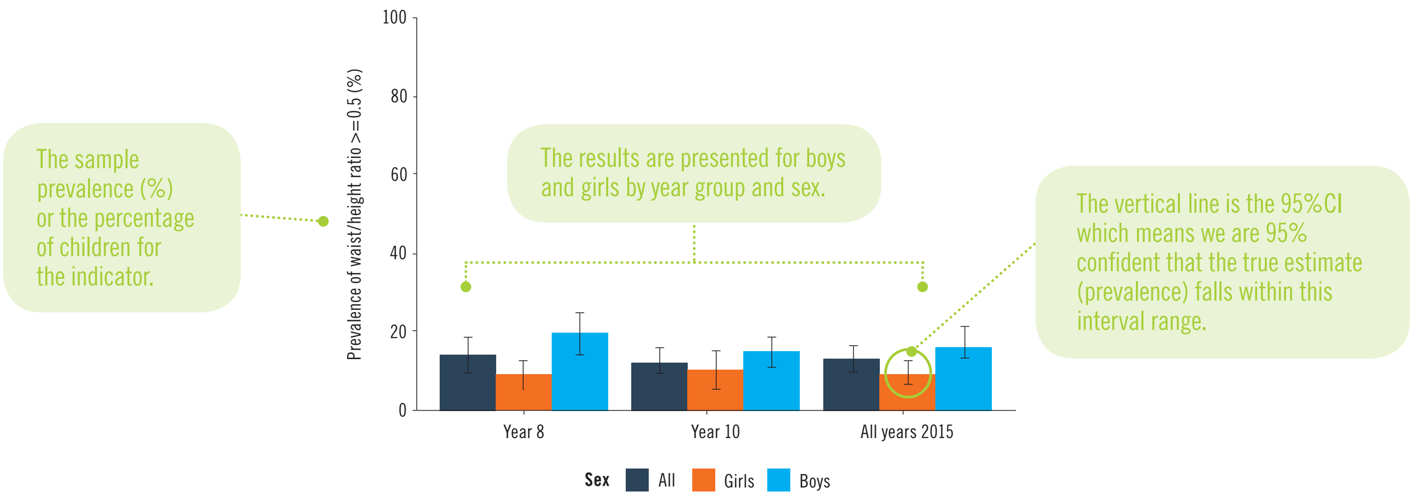
Sex	2015						2010	
	Year 8		Year 10		All		All	
All	13.9	(2.1)	12.2	(1.7)	13.1	(1.6)	**9.5**	**(1.1) b**
Girls	**8.4**	**(1.9) a**	**9.9**	**(2.4)**	**9.2**	**(1.6) a**	8.2	(1.3)
Boys	19.3	(2.7)	14.5	(2.2)	16.9	(2.0)	**10.8**	**(1.4) b**

a = there was significant difference between the values for boys and girls. (i.e. between 8.4% and 19.3%)

b = there was significant difference between the values for 2010 and 2015. (i.e. between 13.1% and 9.5%)

a Indicates statistically significant difference at P < 0.05 between sex and within year group.
b Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all year groups and between 16.9% and 10.8%.

Figure 4.10 Prevalence of waist-to-height ratio ≥0.5among adolescents in secondary school by sex and year group, in 2010 (%, 95%CI)



CHAPTER 1: SUMMARY

Schools Physical Activity And Nutrition Survey – Historical Context

The first representative sample of children's weight and fitness which included children from NSW was conducted in 1985 as the Australian Health and Fitness Survey. The next NSW children's population survey was conducted in 1997 (Schools Fitness and Physical Activity Survey) and funded by the NSW Department of Education and Department of Health. Subsequently, the NSW Ministry of Health has funded three children's health surveys, Schools Physical Activity and Nutrition Survey (SPANS) in 2004, 2010 and 2015.

SPANS provides cutting edge and unique information, as NSW is currently the only Australian state which has representative, comparable and serial school-based surveys on children's weight and indicators of weight related behaviours. In addition it is the only jurisdiction internationally to have population monitoring of children's cardio-respiratory endurance and fundamental movement skills.

SPANS 2015 Survey methods

SPANS 2015 is a cross-sectional population survey of New South Wales (NSW) schoolchildren age 5 to 16 years. The survey was carried out in February and March 2015. The sample includes primary and secondary schools that were randomly sampled from Government, Catholic and Independent schools across NSW. SPANS 2015 surveyed children and adolescents in 84 schools, and obtained information from 7,556 school students. These students were representative of all school students in NSW, and provide information comparing boys and girls, across age groups, and according to location (rural / urban comparisons) and by cultural group and socio-economic status.

The survey and measurement methods have remained consistent to allow direct comparison across SPANS survey years. This contributes to adolescent health surveillance for NSW, with the capacity to examine 20 year trends in key health indicators for young people related to chronic disease prevention. SPANS assessed children's health behavior including dietary patterns and eating behaviours, physical activity and measures of fitness and fundamental movement skills, and identified factors related to overweight and obesity. SPANS is comprised of two parts, a questionnaire, and field measurements of height, weight and fitness. For 2015, a central purpose of the SPANS survey was to assess changes in rates of overweight and obesity to inform the current NSW State Health Plan.[1]

Policy background

SPANS data have been used to inform policy and practice in NSW. The survey results have not only identified and documented trends in weight status, but also in related dietary and physical activity related health behaviours. The NSW Healthy Eating and Active Living (HEAL) Strategy 2013-20181 provides a whole of government framework to encourage and support the community to make healthy lifestyle changes at a personal level, and to create an environment that supports healthier living through better planning, built environments and transport solutions.

A goal of the HEAL Strategy is to "Keep people healthy and out of hospital" and accordingly focuses on actions to reshape the health system to focus more on wellness and illness prevention in the community. In response to the high prevalence of overweight and obesity among children in NSW, the plan details an explicit target in relation to childhood overweight and obesity, namely to

"Reduce overweight and obesity rates of children and young people (5 – 16 years) to 21% by 2015".

Thus, the primary purpose for the Schools Physical Activity and Nutrition Survey (SPANS) is to provide on-going direct monitoring and reporting on trends in the rates of overweight and obesity and weight-related behaviours in relation to this target.

Summary and recommendations

This section summarises selected findings by school level (primary and secondary) and translates the relevant findings into potential recommendations for action across settings and these include the family and home environment, primary health care, schools and government. Additional detailed findings, and results presented by subgroups, are shown for each health behaviour in the chapters throughout this report.

The following tables provide a snapshot of key findings of SPANS 2015, for primary schoolchildren and adolescents in secondary school, summarising the [i] main health behaviours findings overall and for boys and girls, [ii] some subgroup differences in these health behaviours by the child or adolescents' location (rural and urban), socio-economic status and cultural background (English-speaking, Asian, European and Middle Eastern) and; [iii] weight status (thin, healthy weight, overweight and obese) and [iv] for where the information is available, changes between SPANS 2010 and SPANS 2015. Significant differences between these groups are shaded green for positive differences and red for negative differences.

SNAPSHOT 2015: PRIMARY SCHOOL CHILDREN

22.9% or approximately 1 in 5 NSW children are overweight or obese (boys 22.6%, girls 23.2%)

Positive difference | Negative difference

		All	Girls	Boys
Met recommended daily fruit intake		78%	79%	77%
Met recommended daily vegetable intake		5%	5%	5%
Eat breakfast daily		84%	83%	85%
Drank +1 cups of soft drink every day		5%	5%	6%
Ate takeaway meals/snacks from fast food outlets ≥1/week		20%	18%	21%
Met recommended daily physical activity level		23%	18%*	28%
In the healthy fitness zone		63%	65%*	60%
Met recommended daily limits on screen time	Week day	62%	68%*	56%
	Weekend	21%	26%*	17%
Driven to school		54%	55%	53%
Met recommended sleep time	School night	77%	77%	77%
	Non-school night	75%	74%	77%
Brush teeth twice a day		66%	68%*	65%

** significant difference between girls and boys*

Overall, 15.8% and 7.1% of NSW children were overweight and obese, respectively. Although rates of fruit consumed were high, only one in 20 met the recommended daily vegetable serves. The majority of children ate breakfast daily. The prevalence of consuming one or more cups (250mls) of soft drink daily was low and around one in five children ate snacks or meals from takeaway or fast food outlets at least once a week. Two-thirds of children meet the screen time guidelines of less than two hours/day, but this is only around one fifth of children on weekends. Only a quarter of children meet the physical activity guidelines of an hour of activity each day, but three quarters report that they slept sufficiently to be in the "healthy sleep range". Two thirds of children report that they brush their teeth twice a day.

SOCIO-DEMOGRAPHIC DIFFERENCES IN 2015: PRIMARY SCHOOL CHILDREN

Positive difference

Negative difference

		Locality		SES			Cultural background			
		Urban	Rural	Low	Middle	High	English speaking	European	Middle Eastern	Asian
Met recommended daily fruit intake		77%	82%*	76%	79%	79%	79%	82%	79%	67%*
Met recommended daily vegetable intake		6%	6%	5%	6%	4%	5%	2%	4%	5%
Eat breakfast daily		83%	87%*	74%*	85%	88%	86%	74%*	56%*	78%*
Drank +1 cups of soft drink every day		5%	5%	9%*	6%	4%	5%	4%	11%*	3%
Ate takeaway meals/ snacks from fast food outlets ≥1/week		21%	16%	28%*	21%*	15%	19%	16%	30%*	29%*
Met recommended daily physical activity level		22%	28%*	19%	26%	23%	24%	24%	14%*	11%*
In the healthy fitness zone		64%	58%	46%*	66%	68%	65%	64%	42%*	53%*
Met recommended daily limits on screen time	Week day	62%	62%	49%*	63%	66%	62%	68%	47%*	67%
	Weekend	22%	21%	17%*	21%	24%	21%	26%	14%*	31%*
Driven to school		57%	42%*	62%	48%	55%	52%	42%	77%*	61%
Met recommended sleep time	School night	77%	77%	78%	77%	76%	76%	78%	78%	85%*
	Non-school night	76%	75%	71%*	77%	77%	75%	73%	73%	82%*
Brush teeth twice a day		66%	70%	58%*	67%	70%	67%	70%	43%*	75%*

** significant difference between children from:*
- rural areas compared with urban areas; low and middle SES backgrounds compared with high SES backgrounds; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background

Rural children are more likely to eat fruit, eat breakfast daily and meet the physical activity guidelines, compared with urban children. Compared with children from low SES neighbourhoods, children from high SES neighbourhoods consume take-away food and snacks less often, and show high rates of fitness and physical activity. Children from Middle Eastern or Asian cultural backgrounds report lower rates of take away meals or snacks, compared with children from English-speaking backgrounds. These findings among subgroups of children are relevant to planning strategies for children in NSW, as groups at higher and lower risk for particular health behaviours can be targeted with public health programs.

DIFFERENCE BY BMI IN 2015: PRIMARY SCHOOL CHILDREN

Positive difference

Negative difference

		BMI category			
		Thin	Healthy weight	Overweight	Obese
Met recommended daily fruit intake		76%	77%	80%	75%
Met recommended daily vegetable intake		5%	5%	6%	5%
Eat breakfast daily		87%	86%	80%*	76%*
Drank +1 cups of soft drink every day		6%	5%	6%	12%*
Ate takeaway meals/snacks from fast food outlets ≥1/week		20%	19%	21%	28%*
Met recommended daily physical activity level		24%	25%	17%*	16%*
In the healthy fitness zone		71%	73%	44%*	21%*
Met recommended daily limits on screen time	Week day	61%	64%	57%*	49%*
	Weekend	23%	23%	20%	15%*
Driven to school		53%	53%	54%	62%*
Met recommended sleep time	School night	77%	76%	81%*	83%
	Non-school night	75%	76%	74%	75%
Brush teeth twice a day		67%	67%	65%	61%*

** significant difference between children in the thin, overweight and obese, compared with healthy weight BMI category*

There were some significant differences in weight related behaviours of children in the overweight and obese BMI categories, compared with children in the healthy weight BMI. Children with obesity were less likely to: eat breakfast daily, meet daily physical activity and screen time recommendations, have lower cardio-respiratory fitness, and to have higher consumption of soft drinks, snacks and meals from takeaway and fast food outlets and be driven to school. Children in the overweight and obese BMI categories were however more likely to meet sleep recommendations. These factors are somewhat similar for children in the overweight BMI category, compared with healthy weight children. Again, these factors are associated with overweight and obesity, and point to preventive strategies to target childhood obesity.

SNAPSHOT OF CHANGES BETWEEN 2010 & 2015: PRIMARY SCHOOL CHILDREN

Positive difference (green)
Negative difference (red)

		2010	2015	Difference*
Overweight		17%	16%	1%
Obesity		7%	7%	0.4%
Met recommended daily fruit intake		72%	78%	⇧ 6%*
Met recommended daily vegetable intake		4%	5%	⇧ 1%*
Eat breakfast daily		85%	84%	No change
Ate takeaway meals/snacks from fast food outlets ≥1/week		24%	20%	⇩ 4%
In the healthy fitness zone		65%	63%	⇩ 2%
Met recommended daily limits on screen time	Week day	58%	62%	⇧ 4%
	Weekend	19%	21%	⇧ 2%
Driven to school		46%	54%	⇧ 8%*

** significant difference between 2010 and 2015*

There were no significant changes in the prevalence of overweight or obesity in children between 2010 and 2015, indicating a potential stabilisation of child obesity in NSW. Promising significant increases between 2010 and 2015 include a 6% and 1% increase in children meeting the recommended daily serves for fruit and vegetables, respectively. Less favourable changes include a significant increase in the proportion of children being driven to school, with over half of NSW children being driven to school. Similarly, there were increases in exceeding the recommended screen time limits and a decrease in cardio-respiratory fitness, but these were not statistically significant.

SNAPSHOT 2015: ADOLESCENTS IN SECONDARY SCHOOL

27.4% or approximately 1 in 4 NSW adolescents are overweight or obese (boys 27.9%, girls 26.9%)

Positive difference | Negative difference

		All	Girls	Boys
Met recommended daily fruit intake		80%	81%	78%
Met recommended daily vegetable intake		11%	11%	10%
Eat breakfast daily		60%	54%*	66%
Drank +1 cups of soft drink every day		10%	7%	13%
Ate takeaway meals/snacks from fast food outlets ≥1/week		24%	21%	26%
Met recommended daily physical activity level		12%	8%*	15%
In the healthy fitness zone		59%	59%	59%
Met recommended daily limits on screen time	Week day	36%	39%	32%
	Weekend	17%	20%*	14%
Driven to school		24%	22%	25%
Met recommended sleep time	School night	75%	73%	76%
	Non-school night	55%	53%	57%
Brush teeth twice a day		68%	74%	62%

** significant difference between girls and boys*

Overall, 21.7% and 5.8% of NSW adolescents were overweight and obese, respectively. Most adolescents consume recommended amounts of fruit, but only one in 10 meets the recommended daily serves for vegetables. While three in five adolescents ate breakfast daily, girls were significantly less likely to eat breakfast daily, compared with boys. The prevalence of consuming one or more cups (250mls) of soft drink daily was relatively low however almost one quarter of adolescents ate snacks or meals from takeaway or fast food outlets at least once a week. Only one in 8 meet the physical activity guidelines, and girls were significantly less likely than boys to meet these recommendations. Three in five meet the cardio-respiratory fitness criteria and one third achieved the screen time guidelines during the week, which halves on the weekend. One quarter are driven to school, and three quarters report sleeping in the healthy range on a school night but only around half meet the recommended sleep duration on non-school nights. Two thirds of adolescents brush their teeth twice a day.

SOCIO-DEMOGRAPHIC DIFFERENCES IN 2015: ADOLESCENTS IN SECONDARY SCHOOL

Positive difference

Negative difference

		Locality		SES			Cultural background			
		Urban	Rural	Low	Middle	High	English speaking	European	Middle Eastern	Asian
Met recommended daily fruit intake		78%	86%*	81%	77%	81%	81%	80%	80%	69%*
Met recommended daily vegetable intake		9%	14%*	12%	9%	10%	11%	13%	10%	9%
Eat breakfast daily		61%	57%	55%*	56%*	68%	86%	74%	56%	78%
Drank +1 cups of soft drink every day		9%	11%	13%*	11%*	7%	10%	9%	16%	7%
Ate takeaway meals/ snacks from fast food outlets ≥1/week		27%	13%*	23%	24%	24%	22%	16%	26%	34%*
Met recommended daily physical activity level		11%	13%	12%	11%	12%	12%	18%	12%*	6%*
In the healthy fitness zone		57%	62%	52%*	58%	66%	61%	59%	39%*	40%*
Met recommended daily limits on screen time	Week day	34%	40%	33%	33%	41%	36%	48%	41%	30%
	Weekend	15%	22%*	19%	14%	17%	17%	8%	21%	18%
Driven to school		27%	14%*	28%	22%	20%	22%	28%	48%*	24%
Met recommended sleep time	School night	74%	75%	75%	74%	75%	74%	75%	80%	77%
	Non-school night	55%	56%	56%	55%	55%	56%	37%*	63%	50%
Brush teeth twice a day		69%	65%	65%*	65%*	74%	67%	75%	61%	79%

** significant difference between children from:*
- rural areas compared with urban areas; low and middle SES backgrounds compared with high SES backgrounds; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background

Adolescents in rural areas were more likely to meet the recommendations for daily serves of fruit and vegetables, less likely to consume take-away food and snacks from takeaway and fast food outlets, meet screen time limits on weekend days and less likely to be driven to school, compared with adolescents in urban areas. Adolescents from low and middle SES neighbourhoods were less likely to eat breakfast daily, brush their teeth twice a day and were more likely to drink one or more cups of soft drink daily, and adolescents from low SES neighbourhoods were less likely to have adequate cardio-respiratory fitness, compared with adolescents from high SES neighbourhoods. Compared with adolescents from English-speaking backgrounds, adolescents from Asian cultural backgrounds were less likely to eat fruit, meet the physical activity recommendation and were more likely to consume take-away food and snacks and brush their teeth twice a day. A significantly higher proportion of adolescents from Middle Eastern cultural backgrounds were driven to school, compared with peers from English-speaking backgrounds. These findings among subgroups of adolescents are relevant to planning strategies for children in NSW, as groups at higher and lower risk for particular health behaviours can be targeted with public health programs.

DIFFERENCE BY BMI IN 2015: ADOLESCENTS IN SECONDARY SCHOOL

Positive difference

Negative difference

		BMI category			
		Thin	Healthy weight	Overweight	Obese
Met recommended daily fruit intake		68%*	81%	80%	81%
Met recommended daily vegetable intake		9%	11%	10%	7%
Eat breakfast daily		68%	62%	53%*	50%
Drank +1 cups of soft drink every day		12%	10%	7%	15%
Ate takeaway meals/snacks from fast food outlets ≥1/week		27%	24%	21%	25%
Met recommended daily physical activity level		12%	12%	10%	14%
In the healthy fitness zone		67%	69%	37%*	11%*
Met recommended daily limits on screen time	Week day	41%	37%	33%	28%
	Weekend	19%	17%	15%	18%
Driven to school		23%	23%	26%	27%
Met recommended sleep time	School night	76%	74%	75%	73%
	Non-school night	41%*	57%	56%	49%
Brush teeth twice a day		67%	71%	62%*	52%*

** significant difference between children in the thin, overweight and obese, compared with healthy weight BMI category*

There were some significant differences in weight related behaviours of adolescents in the overweight and obese BMI categories, compared with adolescents in the healthy weight BMI. Adolescents in the overweight and obese BMI categories were more likely to have lower cardio-respiratory fitness and a lower prevalence of brushing teeth twice a day. Adolescents in the overweight BMI category were less likely to eat breakfast daily. Adolescents in the thin BMI category were significantly less likely to meet recommended sleep duration on non-school nights, compared with adolescents in the healthy weight BMI category. Again, these factors are associated with overweight and obesity, and point to preventive strategies to target childhood obesity.

SNAPSHOT OF CHANGES BETWEEN 2010 & 2015: ADOLESCENTS IN SECONDARY SCHOOL

Positive difference

Negative difference

		2010	2015	Difference*
Overweight		17%	22%	⇧ 5%*
Obesity		5%	6%	⇧ 0.7%
Met recommended daily fruit intake		74%	80%	⇧ 6%*
Met recommended daily vegetable intake		7%	11%	⇧ 4%*
Eat breakfast daily		66%	60%	⇩ 6%
Ate takeaway meals/snacks from fast food outlets ≥1/week		29%	24%	⇩ 5%
In the healthy fitness zone		65%	59%	⇩ 6%
Met recommended daily limits on screen time	Week day	40%	36%	⇩ 4%
	Weekend	15%	17%	⇧ 0.4%
Driven to school		19%	24%	⇧ 4%*

** significant difference between 2010 and 2015*

The prevalence of overweight and obesity significantly increased among adolescents between 2010 and 2015. There was an absolute increase of 5% in the proportion of adolescents who are overweight, and a slight increase in the proportion of adolescents with obesity in NSW. Compared with 2010, a lower proportion of adolescents eat breakfast daily, met recommended screen time limits on weekdays, and a higher proportion are being driven to school in 2015. Nonetheless, there were some healthy trends, with increases in the number of adolescents meeting the recommended daily serves of fruit and vegetables.

EVIDENCE-BASED RECOMMENDATIONS

There have been substantial and significant improvements in weight and some weight related behaviours since the last SPANS in 2010, however these have mainly been among primary school age children. Overweight and obesity remained unchanged for primary schoolchildren, with no increases since 2010, but among secondary school adolescents, increases were seen in the proportion who were classified as overweight and obese. The following section uses the evidence gathered in the current SPANS (combining the findings from primary and secondary schools) to develop recommendations across a range of settings to improve children's lifestyle behaviours associated with increased risk of poor health outcomes.

The findings showed that many health behaviours require ongoing attention. In 2015, NSW children and adolescents still have;

- Low levels of physical activity, cardio respiratory and muscular fitness
- Low levels of active travel to school
- Low levels of fundamental movement mastery
- High consumption of processed 'junk food' and sugar sweetened beverages
- High screen time (i.e., television, computer, smart phone and other electronic devices)

Overall, the findings suggest that health literacy is low and efforts to improve knowledge of health promotion and health services among parents, carers and schoolchildren is a priority. Strategies to improve health literacy include *social marketing and media campaigns* to communicate information about healthy lifestyle choices that can reach parents, children and adolescents and age-appropriate *health promotion programs* to complement and reinforce social marketing messages.

Formative research is required to ensure that social marketing messages and campaigns are designed so that they are relevant and effective for families that are more socially disadvantaged and from culturally diverse backgrounds. Similarly, the evidence presented in this report should be used to guide the development of targeted health promotion activities towards specific child and adolescent populations which are at greatest need of intervention.

Actions to improve children and adolescents weight-related lifestyle choices are needed at all levels of society – individual, family, local, national, and international. The following section uses a settings approach guided by the findings to develop recommendations across various settings where changes are required in order to support healthier behaviours in children and adolescents. A review of these childhood obesity prevention strategies has been conducted in 2015, updating the evidence base for action,[2] which summarises the evidence underpinning the settings approach used below.

Actions within the family and home environment

The findings indicate that parents need encouragement to help their families to adopt healthier lifestyles by improving weight and health related behaviours and improving health literacy. The evidence showed that family and home practices which require attention include;

Daily breakfast is recommended for everyone. The data showed that only three in four children and adolescents ate breakfast every day.

- Encourage families to eat a nutritious breakfast every day with guidance on ideas for quick and nutritious breakfasts.

Soft drinks in the home increases children and adolescents' overall consumption of soft drinks which provide substantial energy with little or no nutritional value. The data showed that one in ten children and adolescents usually had soft drinks available at home.

- Encourage parents to limit the availability of soft drinks in the home and to provide non sweetened alternative drinks, especially plain water for children and adolescents.

Fast food and take away food should be considered "treats" and eaten only occasionally. The data showed that one in four children and adolescents ate takeaway meals or snacks from fast food outlets one or more times a week.

- Encourage families to reduce the frequency of purchasing takeaway meals or snacks from fast food outlets.

Unrestricted snacking may encourage unhealthy food consumption and have a deleterious effect on the quality of family meals. We did not measure the quality of the foods that children may snack on, but the data showed that one in three children and adolescents had unrestricted snacking at home.

- Encourage parents who allow unrestricted snacking to provide healthy foods, such as cut up fruit and vegetables, and non-sweetened drinks.

Offering sweets as a reward for good behaviour is problematic because using food as a reward can be associated with long term health consequences, including overeating, increasing intake of unhealthy foods and shaping future eating habits. The data showed that one in two parents sometimes or usually offered their child or adolescent sweets as a reward for good behaviour.

- Encourage parents to use non-food rewards for good behaviour, for example, verbal praise, which is important to build self-esteem, or reward charts which focus on a goal such as spending time with their child (e.g., playing in the park, playing with child).

Eating dinner in front of the television has been associated with poorer diet quality and with a higher body mass index. The data showed that one in ten children and adolescents regularly (i.e., five or more times a week) ate dinner in front of the television.

- Encourage families to sit at a table to eat dinner with the television turned off.

Screen time is the primary contributor to children and adolescents' total sedentary time, and excessive screen time is linked to a range of adverse health outcomes. The data showed that one in two children and adolescents met the recommended daily limit on screen time on week days and one in five on week end days; one in five have no rules on screen time; one in five have a television in their bedroom and one in six used electronic media during sleep time.

- Increase parent, children and adolescents awareness of the recommended limits for daily screen time.
- Encourage parents to remove screen devices (e.g., televisions, smart phones, tablets) from children and adolescents' bedrooms.
- Encourage parents to impose rules on screen time.
- Encourage parents to remove screen devices from children and adolescent's bedrooms at night.

Active travel to school by either walking, cycling, scooter, or using public transport may contribute towards daily physical activity, which in turn, is associated with a range of improved health outcomes. Further, increasing children's active travel to school may contribute to reduction in traffic congestion and carbon emissions around schools. The data showed that one in six children used active transport and one in seven used public transport to get to school.

- Promote community walking buses (groups of children walking with one or more adults) for children to safely travel to and from school.
- Encourage parents to promote active travel within the family unit (role modelling) for short distances (e.g., < 1.5 kms = 15 minute walk) including school, shops, green spaces.

Physical activity is associated with a wide range of health, social, economic, and environmental benefits and children should be physically active every day. Physical activity can be planned (e.g. sports) or unplanned (e.g. active play, unorganised physical activity). The data showed that one in five children and adolescents met the daily physical activity recommendation.

- Encourage parents to promote daily physical activity (e.g., walking short distances, i.e., < 1.5 kms, to destinations including school, local parks, shops).
- Encourage parents to limit screen time during day light hours
- Encourage parents to purchase 'active' items (i.e., skipping rope, balls, Frisbee) rather than screen devices for child and adolescent entertainment.
- Encourage parents to be positive role models through participating in physical activity with their children.

NSW Health Response: Supported.

The NSW Health *Make Healthy Normal* (MHN) campaign is an awareness raising and behavioural change media strategy that highlights overweight and obesity as a public health issue in NSW. MHN seeks to motivate people to reassess their lifestyle choices to create a new healthy normal in line with the goals of the *NSW Healthy Eating and Active Living Strategy 2013 – 2018*. Key messages include "be active everyday", "sit less, move more", "make water your drink", "eat more fruit and vege" and "choose smaller portions and less kilojoules".

NSW Health has in place a range of healthy eating and active living support programs. These programs include:

- *Go4Fun,* a free 10 week healthy lifestyle program for children aged 7-13 who are above a healthy weight;
- *Finish with the Right Stuff,* a program encouraging children who participate in junior community sport to eat and drink healthier before, during and after the game; and the *Healthy Kids: Eat Well, Get Active* website.
- *Munch and Move* encourages healthy eating, increased physical activity and reduced small screen recreation in children attending Early Childhood Education and Care services.
- *Live Life Well @ School* helps develop teachers' knowledge and skills in teaching about nutrition and movement, and supports schools to create environments which enable children to eat healthily and be physically active.

Actions within the primary health care setting

In 2013 *Clinical Practice Guidelines for the Management of Overweight and Obesity for Adults, Adolescents and Children in Australia*[3] were developed for primary health care professionals to promote healthy eating plans, increased physical activity and behavioural modification as the first approach to managing obesity for individuals, bringing about a range of health benefits.

- Support primary care health providers to adopt the clinical practice guidelines.
- Provide pre-service training to primary health care providers including general practitioners, practice nurses, Aboriginal health workers and allied health professionals (e.g. dieticians, psychologists, exercise physiologists, diabetes educators, social workers, occupational therapists, physiotherapists, mental health nurses) on the assessment and measurement of overweight and obesity in children and adolescents.
- Health professional training on discussing weight with children, adolescents and parents.

NSW Health Response: Supported.

NSW Health is promoting the clinical practice guidelines in both primary care and NSW Health settings. NSW Health is developing training and resources to support the identification of children above a healthy weight including raising weight status with parents and children as appropriate.

Actions within the school setting

A range of government funded school-based initiatives have been developed to support schools deliver healthy eating and physical activity programs, with the focus to date on primary, rather than secondary schools. The data suggested that the main barrier to promote physical activity in primary and secondary schools were competing demands on curriculum time.

Primary schools

The data shows that in four out of five primary schools generalist (i.e., classroom) teachers deliver physical education and sport; two in five urban primary schools have implemented the NSW Healthy School Canteen Strategy *(Fresh Tastes @ School)*.

- Monitor the implementation of the new *Australian Curriculum: Health and Physical Activity* in schools
- Consider incorporating physical activity as a mandatory reporting outcome linked to NAPLAN
- Encourage Principals of government primary schools to employ specialist physical education teachers to deliver quality physical education and sport.
- Ensure the delivery of remedial motor skill programmes, especially in the early primary school years.
- Encourage Principals of urban government primary schools to implement the NSW Healthy School Canteen Strategy.
- Assist schools with healthy fund raising options and healthy eating in their School Plans.
- Encourage wider linkage between schools and the NSW Office of Preventive Health, which supports a range of healthy eating and physical activity programs in schools (e.g., Live Life Well @ School, Crunch & Sip®)

Secondary schools

The data shows that the main barrier to promote physical activity in secondary schools in addition to competing demands on curriculum time was lack of interest from students. Less than one third of secondary schools addressed healthy eating in the School Plan

- Monitor the implementation of the new *Australian Curriculum: Health and Physical Activity* in schools
- Consider incorporating physical activity as a mandatory reporting outcome linked to NAPLAN
- Provide suitable outdoor recreation facilities and opportunities for adolescents to be physically active
- Encourage wider linkage between schools and the NSW Office of Preventive Health, which supports a range of healthy eating and physical activity programs in schools (e.g., Healthy School Canteen Strategy)

NSW Health Response: Supported in part.

NSW Health does not support the incorporation of physical activity as a mandatory reporting outcome linked to NAPLAN, and notes that this is not a NSW program.

Live Life Well @ School is a joint initiative between NSW Health and the NSW Department of Education in consultation with the Catholic Education Commission NSW and the Association of Independent Schools of NSW. *Live Life Well @ School* is a 'whole of school' approach to healthy eating and increased physical activity whereby schools receive tailored ongoing support from Local Health Districts. *Live Life Well @ School* also offers professional learning for teachers to improve skills and confidence in teaching nutrition, fundamental movement skills and physical education as part of the K-6 PDHPE curriculum.

The NSW Department of Education has a variety of professional learning opportunities for primary school leaders, teachers and staff in physical activity and the Personal Development, Health and Physical Education (PDHPE) curriculum including practical workshops, video conferences, online modules and whole school review tools.

In NSW, principals have the flexibility to employ teachers with specialisation to meet the needs of their students. The NSW Department of Education currently supports individual learning plans and differentiates curriculum for all students including fundamental movement skills (if required).

A revised Healthy School Canteen Strategy was launched in February 2017, and applies to all schools across NSW. The NSW Department of Education, the NSW Ministry of Health, the Catholic Education Commission NSW and the Association of Independent Schools of NSW are contributing to the strategy with the aim to increase the availability of healthy food and drink in school canteens to make the healthy choice, the easy one.

In addition, the NSW Department of Education has committed to encouraging increased physical activity through the Premier's Sporting Challenge; delivering nutrition and physical activity education through PDHPE curriculum; achieving compliance with policy of 150 minutes of physical activity per week in school time; exploring options to increase public access to school green space; and in partnership with NSW Health, trialling chilled water provision in schools and developing and testing new approaches to promote physical activity and healthy eating practices in high schools.

NSW is currently in the development of a new PDHPE K – 10 syllabus and will ensure that physical activity and nutrition have a high priority in its development. In NSW, principals are responsible for monitoring the delivery of curriculum in schools.

Government policy

There are a range of actions that governments can undertake to promote healthy lifestyle behaviours with the community that can benefit children and adolescents. These actions can include social marketing to improve health literacy and policies to leverage behavioural change at a population level.

Social marketing campaigns

One in two parents, children and adolescents knew the recommended daily limits on screen time; and one in three knew the daily physical activity recommendation. One third of children and adolescents did not meet the recommendation for tooth brushing and three in four children and adolescents met the sleep recommendation on school nights and two in three on non-school nights.

- Sustained social marketing programmes that promote evidenced based recommendations on daily physical activity participation and daily limits on screen time.
- Social marketing programmes that promote brushing teeth twice a day.
- Social marketing programmes that increase awareness on child and adolescent sleep recommendations.

NSW Health Response: Supported.

The NSW Health *Make Healthy Normal* (MHN) campaign is a social marketing campaign aimed at raising awareness of overweight and obesity as a public health issue in NSW. MHN seeks to motivate individuals to make healthy lifestyle choices and create a new healthy normal in line with the goals of the *NSW Healthy Eating and Active Living Strategy 2013 – 2018.* Key messages include "be active everyday", "sit less, move more", "make water your drink", "eat more fruit and vege" and "choose smaller portions and less kilojoules".

Policies[2]

- Implement fiscal or other regulatory policies to reduce the consumption of unhealthy foods including sugar-sweetened beverages and energy-dense, nutrient-poor foods.
- Implement restrictions on the marketing of unhealthy foods, including fast foods, sugar-sweetened beverages and energy-dense, nutrient-poor foods to children and adolescents.
- Eliminate the provision or sale of unhealthy foods including sugar-sweetened beverages and energy-dense, nutrient-poor foods in the schools and sporting venues.
- Restrict corporate food and beverage sponsorship of children's sport and at sporting venues.

NSW Health Response: Supported in part.

Fiscal and regulatory policies and restrictions on the marketing of unhealthy food and drink fall within the remit of the Federal Government.

The NSW Healthy School Canteen Strategy aims to provide school students across NSW with healthy food and drink choices to support the healthy growth and development of students. The Strategy applies to all food and drink provided in NSW school canteens and vending machines.

Finish with the Right Stuff is a NSW Health program aimed at encouraging children who participate in junior community sport to eat healthy and drink water after sport. The program also aims to support community sports clubs to supply healthy food and drink environments to promote healthy eating and drinking.

There is some evidence to suggest that sponsorship by food and beverage companies of community sporting organisations results in high recall and positive association by children of these brands. NSW Health in collaboration with the Office of Sport will continue to monitor the evidence on the relationship between donations and sponsorship and children's nutrition, participation in physical activity and the potential contribution to reducing childhood overweight and obesity.

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CHAPTER 2: METHODS

BACKGROUND

SPANS 2015 is a repeat, cross-sectional, representative, population monitoring survey of New South Wales (NSW) schoolchildren age 5-16 years that has been conducted in 1997[1], 2004[2] and 2010[3]. SPANS methodology, including sampling frame, sample size calculations, staff and indicator measurement protocols have remained consistent across survey years to allow comparability and generation of trend information. Over time, indicators of lifestyle behaviours associated with children's health have been added to the survey. The actual questionnaires and details of the measures are provided in the Appendix.

The primary purpose of SPANS 2015 is to report on the change in rates of overweight, obesity and weight-related behaviours in relation to the NSW State Health Plan target. The sampling frame consists of primary and secondary schools randomly selected from each education sector (government, Catholic and independent) across socio-economic quintiles and in urban and rural areas, to provide a representative sample of NSW school-age children. The key research questions, in relation to children age 5-16 years in NSW, are:

- What are the prevalence, population distribution and changes (2010 to 2015) in overweight and obesity, physical activity participation and sedentariness?
- *What are the prevalence, population distribution and changes (2010 to 2015) of key weight-related dietary habits and eating behaviours?*
- *What are the prevalence, population distribution and changes (2010 to 2015) of adequate physical activity, fitness (cardiorespiratory and muscular), fundamental movement skills and sedentary behaviours?*

What are the prevalence and population distribution of good dental health and sleep hygiene?

APPROVALS

Approvals to conduct the survey were received from the University of Sydney's Human Research Ethics Committee (HREC), the Strategic Research Directorate (SERAP) at the NSW Department of Education and Training, and the Catholic Education Offices for the Dioceses of Bathurst, Broken Bay, Canberra, Lismore, Maitland-Newcastle, Parramatta and Wollongong.

FIELD STAFF

The field team consisted of four groups of four field officers (9 female, 7 male). The field officers were seven experienced teachers seconded from public schools, and nine new PDHPE graduate teachers. The field officers underwent eight days of training and orientation prior to data collection. The training included the provision of two practice days in primary and secondary schools in order to familiarise staff with the timing and administration of the survey.

Field staff received a survey manual containing the measurement protocols, instructions on the administration of the questionnaires, copies of the questionnaires and ethics approval letters. Prior to the data collection, all field staff were required to achieve 99% inter-rater agreement criterion for all anthropometric measures and 80% inter-rater agreement criterion for all fundamental movement skills assessments.

SAMPLE SIZE CALCULATIONS

Sample size calculations were based on two primary outcomes: (i) achieving reliable estimates of point prevalence; and (ii) the detection of differences between demographically-defined groups (sub-groups).

To detect the differences between sub-groups, sample size calculations were based on analyses of expected differences between boys and girls within a school year group, based on previous survey findings. Sample size calculations were based on numbers required per cell (the number of each gender in each year group) under simple random sampling.

Cluster sampling was employed for the survey to adjust for the correlation of measures for children in the same school. This required that the sample size be inflated to account for the clustering effect. In 2010, the highest cell prevalence for obesity/overweight was 29.9% (boys in Year 6), and it was considered unlikely that estimates in 2015 would substantially exceed this prevalence estimate. Sample size was therefore calculated using p1=0.30 and p2=0.20, which enabled detection of a difference of 10% in the prevalence between groups, with 80% power and alpha=0.05.

The selection of two classes required a larger design effect of around 2.0; that is, about 626 children were required in the smallest cell, or 1,252 children in each year group. This sample size represented an upper boundary of the target sample size required. The required sample size is explained in Table 2.1.

Table 2.1 Summary of sample size calculations (n)

Factor	Primary school	High school	Total
Base	313	313	
Design effect for clustered data (DEFF)	2	2	
Sex	2	2	
Number of year groups to survey	4	2	
Number of children	5,008	2,504	7,512
Response rate (%)	0.6	0.5	
Total number of children invited to participate	8,347	5,008	13,355
Estimated average class size	25	30	
Classes invited to participate	2	2	
Children per grade invited to participate	50	60	
Schools required (n)	**42**	**42**	**84**

SELECTION OF SCHOOLS AND CHILDREN

A two-stage, stratified, cluster design was used to select schools and classes. The first stage involved the selection of schools, and the second stage the selection of classes (i.e., the cluster unit). In the first stage, the schools were selected using a stratified probability proportionate to size (PPS) methodology, where size is defined by the number of student enrolments. The second stage involved the selection of children by randomly selecting two intact classes from each of the relevant year levels from within the sampled schools. This methodology ensured that all eligible children within a stratum had approximately equal chance of being selected in the sample; that is, two intact classes from each of the relevant year levels were randomly selected from a list of all possibilities, using a random number generator.

School selection

The Australian Council for Educational Research (ACER) provides the sampling frame for SPANS. (ACER maintains an up-to-date database of all Australian schools by state and territory and sector, with enrolment numbers by year level, as well as location and contact details.) In order to be comparable with previous SPANS, the target populations were primary schoolchildren in kindergarten (Year K), Years 2, 4 and 6, and secondary schoolchildren from Years 8 and 10 who were enrolled in educational institutions across NSW. Schools that were excluded from the target population included:

(i) non-mainstream schools (such as schools for students with intellectual disabilities, hospital schools, sport schools and schools for blind or deaf students)

(ii) schools listed as having a total enrolment of less than 180 students

(iii) schools located in remote areas of NSW (schools with a Ministerial Council for Employment Education Training and Youth Affairs (MCEETYA) Geo-location code 7 or 8)

Proportional stratified random sampling was used to select schools. Schools were stratified by education sector (Government, Catholic and Independent), with the number of schools selected in each sector being proportional to the number of students enrolled in that sector of schools (i.e., for primary schools: Government 69.9%; Catholic 20.3% and Independent 9.8%; and for secondary schools, Government 60.7%; Catholic 22.0% and Independent 14.3%).

Within each sector, the schools were ordered by location (based on MCEETYA Geo-location code to identify rural and urban), school, gender, socio-economic status (SES) and school size. The school sample was therefore representative of sector, location, gender composition and SES; that is, the proportions of students from across the different combination of stratification variables were similar to those in the population of eligible students.

Separate samples were drawn for each school level (primary and secondary). Schools with enrolments at both primary and secondary levels were included on each frame and therefore could be sampled for primary, secondary or both school levels. In order to achieve the student sample of 7,512 children, approximately 13,355 children were required to be invited from 42 primary and 42 secondary schools randomly selected from the ACER Sampling Frame.

Additionally, two replacement schools were identified for each selected school, and these were selected from within the same education sector and were similar in terms of size and SES. These schools were approached only if the initial school identified declined the invitation to participate in SPANS.

Participating schools were remunerated for the time liaison teachers spent distributing and collecting consent forms, at the Department of Education and Communities rate of 0.5/day relief from face-to-face teaching (RFT; i.e., $AUD205).

Student selection

The Principal of each selected school was sent an information package during Term 4, 2014, inviting their school to participate in SPANS. SPANS research officers contacted each Principal one week after the package was distributed, to answer any questions and ascertain interest in participating in the survey. Principals who agreed to participate were asked to return a signed consent form and identify a liaison teacher to be the school's primary contact person during the survey period.

The SPANS research team contacted each school's liaison teacher to determine the organisation, number and size of classes in year groups to be surveyed. The liaison teacher provided the class names and an estimation of the number of children in each class in 2015. Two classes per year group (i.e., Years K, 2, 4 and 6 in primary schools and Years 8 and 10 in high schools) were then randomly selected using a Microsoft Excel number randomiser program. The research team and liaison teacher also arranged a date to visit the school in Term 1, 2015.

Information sheets, consent forms and questionnaires for parents of children in Years K, 2 and 4 were distributed to each school three weeks prior to the school visit in 2015.

Only those children with consent forms signed by their parents (Years K, 2 and 4) and themselves (Years 6, 8 and 10) could participate in the survey. Children were allowed to decline or withdraw at any time during the survey.

DATA COLLECTION

The data were collected over seven weeks during Term 1 (9th February to 31st March 2015). Collection took place concurrently in primary schools and secondary schools, in schools from each education sector, and in metropolitan and rural schools, in order to prevent potential bias due to seasonal effects and the effects of progression through the school term on participation rates or performance. Not all measures were determined for all children (Table 2.2). These procedures were identical to previous SPANS.

The survey was administered according to a written protocol and the measures were collected in the following order: anthropometry (undertaken concurrently during the questionnaire administration to children in Years 6, 8 and 10), fundamental movement skill assessment, assessment of standing broad jump and 20-metre shuttle run. The questionnaire took approximately one hour for children in Year 6, and 30 minutes for children in Years 8 and 10, to complete.

OBJECTIVE MEASURES

Anthropometry

Field staff were trained in measuring height, weight and waist circumference, using International Society for the Advancement of Kinanthropometry (ISAK) procedures.[4] These measurements were collected prior to the other tests in order to avoid potential fluid loss due to exertion from the FMS assessment and the fitness assessments (20-metre shuttle run test and standing broad jump).

For each child, height, weight and waist circumference were measured by two field officers; one took the measurement while the other recorded. Height was measured to the nearest millimetre, using the stretch stature method and a portable stadiometer (Mentone Educational, Victoria; model PE 187). Weight was measured to the nearest 0.1 kg, using Tanita portable scales (model HD380). Waist circumference was measured to the nearest millimetre, at the level of the narrowest point between the lower rib and the iliac crest, with a steel anthropometric tape (Lufkin W606PM) and was recorded to the nearest millimetre.

Table 2.2 Measures administered to each year group

Measurement	School year					
	K	2	4	6	8	10
Demographics	•	•	•	•	•	•
Anthropometry	•	•	•	•	•	•
Fundamental movement skills		•	•	•	•	•
Standing broad jump (muscular fitness)		•	•	•	•	•
Cardiorespiratory endurance (cardiorespiratory fitness)			•	•	•	•
Student questionnaire*				•	•	•
Parent (proxy) questionnaire*	•	•	•			

** Includes indicators of physical activity, sedentary behaviours, school travel, dietary patterns and habits, sleep patterns and dental health.*

Body mass index (BMI) was calculated as weight divided by height, squared (i.e., kg/m2). Five categories of BMI were created, based on the definitions of the International Obesity Taskforce,[5] which were thinness (Grade 1), healthy weight, overweight, obese, and combined overweight and obese. Waist-to-height ratio was calculated as waist divided by height and categorised as <0.5 (low cardio-metabolic risk) or ≥ 0.5 (at cardio-metabolic risk).[6]

Post-training, field staff were required to achieve 99% inter-rater agreement criterion for all anthropometric measures. Table 2.3 shows the intra-class correlation coefficients for agreement between raters for each measurement.

Table 2.3 Field staff inter-rater reliability for anthropometry (n=18 raters)

Anthropometric measure	ICC*
Height (cm)	0.998
Weight (kg)	0.995
Waist circumference (cm)	0.998

** Intraclass correlation coefficent*

Fundamental movement skills assessment (FMS)

The skills selected for assessment were those closely related to activities, games and sports in which children were most likely to participate. Children should be developmentally able to master all of these skills by the end of Year 5.[7]

A total of seven FMS were assessed: four locomotor skills (sprint run, vertical jump, side gallop and leap) and three object-control skills (catch, overhand throw and kick), using the *Get Skilled Get Active*[7] process-oriented checklists. Each skill is composed of five to six observable behavioural components that, together, constitute a proficient or mature performance. Skill proficiency was assessed by field staff scoring each component as present or absent. If the child demonstrated the skill component consistently (defined as 80% of the time for the sprint run, and as four out of five trials for all other skill components), they were recorded as possessing that skill component.

For each skill, a score was calculated for each child based on the total number of components performed correctly. The following three skill proficiency outcomes were created:

(i) Mastery: The proportion of children who possessed all components of a skill

(ii) Near-mastery: The proportion of children who possessed all but one component of a skill

(iii) Advanced: Mastery and near-mastery combined

For the analysis, the prevalence of the above categories were calculated, with the proportion of children who possessed each component of each FMS (skill component mastery) also being determined and reported.

Post training, field staff were required to reach 80% inter-rater agreement criterion for all assessments. Table 2.4 shows the intra-class correlation coefficients for each measurement.

Table 2.4 Field staff inter-rater reliability for fundamental movement skills (n=18 raters)

FMS	ICC*
Sprint run	0.966
Vertical jump	0.933
Side gallop	0.975
Leap	0.980
Catch	0.980
Kick	0.937
Overarm throw	0.992

** Intraclass correlation coefficent*

Muscular fitness (standing broad jump) assessment

The standing broad jump (SBJ) assesses the explosive power of the legs and may be considered a general index of muscular strength/fitness in youth.[8, 9] Children were assessed individually on a hard surface with a marked starting line. The child stands with toes behind a line and feet slightly apart. A 'two foot' take-off and landing is used. Children were allowed two trials and the best distance (cm) recorded.

There are no criterion-referenced standards for the SBJ in children, only norm-referenced standards (which are not linked to clinical outcomes). For SPANS, the age-sex adjusted 40th centile10 of the Eurofit Physical Fitness Test Battery protocol for the SBJ11 was used to assess muscular fitness and children were dichotomised as 'achieving the Healthy Fitness Zone' (HFZ; i.e., ≥40th centile) or 'Needs Improvement' (NI; i.e., < 40th centile).

Cardiorespiratory endurance (fitness) assessment

The 20-metre shuttle run test (20mSRT) was used to assess cardiorespiratory endurance.[12] Children were required to run and shuttle back, at increasing speeds, between two lines placed 20 metres apart. The running speed starts at 8.5 km.hr-1 and increases by 0.5km.hr-1 for each successive minute, with each increase corresponding to a change in level of cardiorespiratory effort.

Classes were divided into small groups (~20 children) in order to complete the test, with field staff instructing children regarding the test and running the first level with them. The test was terminated when a child did not reach the end of the track within the given time period on two successive shuttles, or if they withdrew voluntarily. When a child withdrew, a sticker with the level and shuttle was placed on the student's shoulder and recorded by the field staff on the child's questionnaire at completion of the assessment.

For the analysis, scores were recorded as the level and shuttle reached in the test (e.g., level 5, shuttle 3) and converted to the number of total laps completed, to provide a continuous variable (e.g., level 5, shuttle 3 = 35 laps). The number of laps was used to categorise children as 'Needs Improvement (NI)' or 'Healthy Fitness Zone (HFZ)', according to the age-and-sex adjusted criterion-reference standard from FITNESSGRAM.[13]

SELF-REPORT MEASURES

Questionnaires

Three written questionnaires with identical questions were formatted according to children's year groups (see Appendix):

1. Parent questionnaire for parents of children in Years K, 2 and 4 (proxy report for their child)
2. Year 6 questionnaire (child self-report)
3. Years 8 and 10 questionnaire (adolescent self-report).

The questionnaire for parents of children in Years K, 2 and 4 was distributed with the survey information sheet and consent forms to those children in classes which were randomly selected and invited to participate in SPANS. For these children, parent proxies reported for the child. Completion of this questionnaire was voluntary, and parents could decline to complete it but still consent to their child participating in other aspects of the survey.

Children in Years 6, 8 and 10 completed the questionnaire during field team visits to schools. The children were seated while two field team members explained and administered the questionnaire, using a pre-written script to guide the children through the questionnaire, and to ensure its administration was standardised across schools.

Children were encouraged to ask questions if they did not understand any question and were asked to indicate, by putting their hand up, when they had completed the questionnaire, so that a field officer could check each question had a legible response.

Demographic variables

Children's demographic characteristics included sex, date of birth, language spoken most at home, Aboriginal or Torres Strait Islander status, school year, suburb and postcode of their usual residence. For children in Years K, 2 and 4 whose parents did not complete a questionnaire about their child, but who provided consent for their child to participate in other aspects of the survey, this information was extracted from school records and transcribed by field staff onto a data sheet for that student.

Postcode of residence was used as a proxy for socio-economic status (SES), based on the Australian Bureau of Statistics' Index of Relative Socio-economic Disadvantage (IRSD).[14] IRSD is one of the socio-economic indices for areas (SEIFA), which is updated after each Census. The IRSD is an ordinal measure (based on a standard score of 1000 with a standard deviation of 100) and is derived from the Australian collection districts' (CDs) index scores. For the analysis, the scores from the 2011 Census were used to rank NSW postcodes into tertiles of SES. There were differences in IRSD scores for 20 postcodes between 2006 and 2011 Census. These differences reflect suburban demographic changes; IRSD scores increased in 16 and decreased in four postcodes (n=495 children).

Postcode of residence was also used to determine locality, using the Australian Statistical Geography Standard (ASGS) Volume 5 – Remoteness Areas (RA).[15] The Remoteness Structure divides each state and territory into several regions on the basis of relative access to services. There are six classes of RA in the Remoteness Structure: major cities, inner regional, outer regional, remote, very remote and migratory. Children living in 'major cities' were classed as 'urban'; with those living in the remaining RA's classed as 'rural'. There were differences in the geographical classification system of postcodes between 2006 and 2011 Census. The Accessibility/Remoteness Index of Australia (ARIA) used in 2006 was based on road distance from populated localities to the nearest service centre. The index ranged from 0 (highly accessible) to 15 (high remoteness). Postcodes were classified as urban if the ARIA ≤ 1.84, else the postcode was classified as rural. The change in classification systems effected 18 postcodes which were classified as urban for SPANS 2010 and rural for SPANS 2015 (n=613 children).

Language spoken most often at home was coded according to the Australian Bureau of Statistics' Australian System for Classification of Languages (ASCL),[16] and used to categorise children into four main cultural backgrounds: English-speaking, European, Middle Eastern and Asian. (See Appendix for categories.)

Dietary habits and food behaviours

A series of short questions recommended for population-based monitoring surveys[17] and validated among younger children[18] was used to collect information on indicators of diet. Briefly, the questions perform reasonably well in ranking individuals according to their intakes and indicate differences in diet quality between response categories. Because short questions do not provide accurate amounts of foods consumed, estimates of the percentage of children meeting dietary recommendations must be interpreted with caution. Thus, the dietary questions used in SPANS can provide information on the proportions of children who consume higher and lower amounts, but not precise estimate of intakes. Short questions can also give an indication of changes in food consumption, by examining the distribution of responses over time, and to establish trends, provided the same survey questions are used.[17]

The dietary questions included consumption of foods and drinks associated with overweight and obesity, as well as other chronic diseases. These items include fruit, vegetables, red meat, processed meat, milk, fruit juice, water, sugar-sweetened beverages (i.e., flavoured water, soft drinks, energy and sport drinks), hot chips, sweet and salty snack foods, confectionery and ice-cream.

Other diet-related questions assessed family food-related behaviours and eating habits – including rewarding good behaviour with sweet treats, eating breakfast, eating take-away snacks, eating dinner in front of the television (TV) and food rules.

Additional questions developed for the survey assessed food purchasing habits, including the purchase of food from the school canteen or school vending machine.

For the analysis, daily consumption of fruit and vegetables was categorised according to children 'meeting' or 'not meeting' the quantities recommended in the Australian Dietary Guidelines; daily serves of fruit was two or more and vegetables five or more.[19] The revised dietary guidelines include 'half' serves (e.g., for children age 4-8 years recommended daily serves for fruit are 1.5 and for vegetables 4.5), however the validated questions were integer-based. To assess change between SPANS 2010 and SPANS 2015, the 2010 fruit and vegetable data were re-categorised to reflect the new guideline values.

For the analysis, sugar-sweetened beverages (SSBs) were defined as fruit juice, soft drinks or cordial, diet soft drinks or cordial, sports drinks and energy drinks.

The self-reported nature of the data must be acknowledged. Year 6 children were the youngest year group to complete the questionnaire. At this age (11-12 years old), children's ability to give valid responses to frequency-type questions may not be accurate due to difficulties in conceptualising frequency, and in averaging. Their limited knowledge of food and food preparation can also reduce the accuracy of the assessment.[17]

In addition, the data were collected during summer and autumn months, which is likely to influence consumption of certain food types, such as ice-cream and soft drink, and may therefore not be representative of typical intakes throughout the year. Despite these caveats, the survey still offers valuable insight into the food consumption habits of school age children and highlights dietary issues that need to be addressed.

Dental health

Information on children's dental health was determined by three indicator questions from the Australian Research Centre for Population Oral Health's National Dental Telephone Interview Survey.[20] The questions were:

1. *During the last 12 months, how often has your child/have you had toothache?* (Response categories: Very often, Often, Sometimes, Hardly ever, Never)
2. *How often has your child/have you had to avoid eating some foods because of problems with their/your teeth or mouth during the last 12 months?* (Response categories: Very often, Often, Sometimes, Hardly ever, Never)
3. *In the last week, how many times did your child/you brush their/your teeth?* (Response categories: Less than once a day, Once a day, Twice a day or More than twice a day)

For the analysis, response categories for questions one and two were dichotomised as 'Often' (i.e., Very often and Often) and 'Not often' (i.e., Sometimes, Hardly ever, and Never). For the third question, responses were dichotomised as once or less a day (i.e., Less than once a day, Once a day) and Twice or more a day (i.e., Twice a day or More than twice a day).

Physical activity

Estimates of physical activity (PA) levels were determined using a slightly modified version of the validated 60-minute single item screening measure of moderate-to-vigorous physical activity (MVPA).[21] This question has recently been advocated as the primary surveillance indicator of physical activity in children nationally and internationally.[22]

The question reads:

> *Over the past 7 days, on how many days was your child/were you engaged in moderate to vigorous physical activity for at least 60 minutes (this can be accumulated over the entire day, for example bouts of 10 minutes) each day? [Moderate to vigorous activity is any activity that increases the heart rate and gets your child/you out of breath some of the time].*

The national physical activity recommendation for children is: 'For health benefits, children age 5-18 years should accumulate at least 60 minutes in moderate-to-vigorous physical activity every day.'[23] Therefore, for the analysis, children were dichotomised as meeting the recommendation (7 days) and not meeting the recommendation (≤6 days).

School travel

Respondents were asked to report, separately, how they travelled to school and how they travelled home from school in a usual week. A checklist of nine modes of transport was provided (bus, car, cycle, ferry/boat, skateboard/scooter, train, walk) and children in Years 6, 8 and 10 and parents of children in Years K, 2 and 4 were asked which modes of transport they (or their child) used; on how many days they used these types of transport (one to five); and how long they spent on a mode each time they used it.

Respondents could report more than one mode of transport for each trip. From the raw data, the following school travel categories were constructed for the analysis, for travel to school and travel home from school, separately:

(i) Active travel only: *respondents who only reported either walking, cycling, skateboard or scooter*

(ii) Public transport only: *respondents who only reported train, bus, ferry +/- walking*

(iii) Car only: *respondents who reported only travelling by car*

(iv) Mixed mode: *respondents who reported multiple modes of travel (i.e., active transport, and/or public transport, and/or car)*

Separate analyses were conducted on travel to school data, and travel from school data. For each travel mode category, the prevalence was calculated by the number of days and the daily mean and median time spent in each travel mode.

Sedentary behaviours

Time spent in sedentary (sitting) activities was collected using the reliable and valid Adolescent Sedentary Activities Questionnaire (ASAQ).[24] ASAQ has been modified recently to include smartphone and tablet devices, as they have become prevalent in all populations, including school-aged children.[25]

Respondents were asked to think about a normal school week and, from a list of 13 activities done sitting or lying down, write down how long they or their child spent engaged in each activity before and after school on each day of the week and on weekends. The raw data were summarised to yield the total number of minutes spent in each sedentary activity per week.

For the analysis, the total time per week (hours) was calculated for each of the following categories of sedentary behaviours:

(i) Recreational screen time: *watching TV, watching videos/DVDs, or using the computer, smartphone or tablet device for fun*

(ii) Education: *using the computer for doing homework, being tutored or attending Saturday school*

(iii) Travel: *travel by car, bus, train or boat*

(iv) Cultural activities: *reading for fun, doing crafts or hobbies, or playing/practising a musical instrument*

(v) Social activities: *sitting around (e.g., chatting with friends or 'chilling') or going to church*

There are no national recommendations for children's sitting time, however health promotion activities recommend that to reduce health risks among children age 5-18 years, children should 'minimise the time they spend being sedentary every day'. To achieve this recommendation, children should limit use of electronic media (e.g., TV, seated electronic games and computer use) for entertainment, and break up long periods of sitting as often as possible.[23, 26]

The national recommendation for recreational screen time for children age 5-18 years is less than two hours per day. For the analysis, recreational screen time was calculated and children categorised according to the recommended daily limits on screen time (i.e., <2 hrs/day or ≥ 2hrs/day). Total time playing on a smartphone or iPad/tablet was a new, additional component of screen time included in the 2015 questionnaire and this needs to be considered when comparing trends across time, i.e., 2010 and 2015 screen time estimates.

Sleep patterns

There is some evidence that sleep time has decreased among Australian children since 1985.[27] Poor sleep quality and hygiene in children have been associated with a range of negative outcomes, including poorer cognition and school performance,[28] and risk of overweight.[29, 30] For these reasons, questions on sleeping patterns (duration, bedtime and rising time) were included in SPANS 2015. Validated self-report sleep questions for population monitoring are limited and sleep information was captured using questions adapted from validated sleeping habits and hygiene questionnaires.[27, 29, 31, 32] Respondents were asked to answer four questions:

(i) *At what time do you/does your child usually go to bed on a school night?*

(ii) *At what time do you/does your child usually get up on a school day?*

(iii) *At what time do you/does your child usually go to bed on a non-school night?*

(iv) *At what time do you/does your child usually get up on a non-school day?*

For the analysis, duration was calculated as the difference between going to bed and getting up, separately for school and non-school days. As Sunday night precedes a school day, these data were included in the analysis of school day sleep.

For healthy children with normal sleep, the recommendation is that they sleep for between 9 and 11 hours each night.[33] For reporting purposes, primary school age children's sleep was dichotomised as *'Within recommended sleep time'* for reported sleep time of between 9 and 11 hours/night and a sleep time of <9 or >11 hours/night was categorised as *'Outside recommended sleep time'*, for both school and non-school nights.

For healthy adolescents with normal sleep, the recommendation is that they sleep between 8 and 10 hours each night.[33] For reporting purposes, adolescents' sleep time of 8 to 10 hours/night was categorised as *'Within recommended sleep time'* and a sleep time of < 8 and >10 hours/night was categorised as *'Outside recommended sleep time'* for both school and non-school nights.

School Environment Questionnaire

The School Environment Questionnaire (SEQ) was offered online (via SurveyMonkey®) and the school Principal or school liaison officer was asked to complete it before the field team visited the school. Schools that did not complete the online version were given a hard copy and asked to complete the questionnaire on the day of the field team visit. The SEQ information is used in conjunction with the student assessments to help identify factors, including barriers and enablers, associated with children's physical activity and healthy eating at school. The questionnaire differed slightly between primary and secondary schools (see Appendix).

The SEQ was modified by the NSW Office of Preventive Health to include questions around schools' involvement in a number of programs developed as part of the *Healthy Children Initiative* (e.g., *Crunch&Sip®, Live Life Well @ School*) and by other non-government agencies or groups (e.g., *NSW Premier's Sporting Challenge, Live Outside the Box, Active After Schools Community*) to support primary schools in the delivery of healthy eating and physical activity programs.

The PA component of the SEQ included questions on: facilities at or near the school that might be used for sports or other physical activities; availability and frequency of use of those facilities (before school, during recess and lunchtimes, after school); time allocated to physical education (PE) lessons and sport; range of activities offered for PE; which school staff members taught PE and sport; strength of support for sport and PE; barriers within the school to PA skills development and to child/adolescent participation in sport and other physical activities; and the extent to which different strategies were used to promote participation in PA among the students. Some, but not all, questions have been validated.[34]

New questions in 2015 included questions about the school canteen and school practices to encourage a healthy food environment in school and questions on the schools' P&C (Parent and Citizens) and fundraising activities.

SCHOOL LEVEL INFORMATION

Specific information about each school was required to determine response rates and for calculating post-stratification survey weights. During the field visit, field officers completed a proforma asking each school to provide information on the following:

(i) total number of classes in each year group to be surveyed

(ii) total number of male and female enrolments in each year group to be surveyed

(iii) total number of males and females in each randomly selected class in each year group to be surveyed

(iv) number of children who participated in the survey, by sex

(v) number of children who declined to participate, and the number of children absent on the day of the field visit, by sex

DATA MANAGEMENT

Parent and student questionnaires were formatted and printed by Savant Surveys and Strategies (Perth, Western Australia) using a combination of interpretive character recognition and optical marking recognition fields, which allow the subsequent electronic scanning of hand-written alphanumeric characters. Each questionnaire has a unique identification number on each page. All data were pre-coded prior to the scanning process. The scanning process writes all data to an electronic file and scans each questionnaire into individual PDF files. The questionnaires were pulped after being scanned (SITA, Perth, Western Australia).

All questionnaires completed by children in Years 6, 8, and 10 were checked for missing, illegible, or implausible values. This process was undertaken by the field officers on two occasions, once during the school visit after the child had completed the questionnaire, and again in the office prior to the questionnaires being sent to Savant Surveys and Strategies. Savant Surveys and Strategies also had an electronic process for checking unusual data values and provided a list of those data by survey identification number.

All potentially identifying data (student and school names) for each student were stripped from the file and replaced with a unique identifying number. The electronic data file of raw values was checked again for implausible and missing values and, where relevant, corrected against the source questionnaire. The median value, adjusted for sex and year group, was imputed for implausible times (duration) and frequency values reported for school travel and sedentary behaviour questions. Changes were only made to the data file where it was clear that a suspect value was an error. In other cases, legitimately missing values were left blank or recoded as missing. Table 2.5 lists the proportion of values that were missing.

Table 2.5 Summary of the proportion of missing values

Measurement	% missing
Demographics	1.2
Anthropometry	2.5
Fundamental movement skills	
Sprint run	2.6
Vertical jump	2.6
Side gallop	2.3
Leap	3.7
Catch	3.5
Kick	3.2
Overarm throw	3.0
Standing broad jump	3.3
Cardiorespiratory endurance	6.1
Diet questions*	4.1
Physical activity	5.8
Dental	2.9
Sleep	3.0

** range 2.4% -7.4%*

DATA ANALYSIS

SURVEY WEIGHTING

Although the original sampling method adopted for the survey was designed to provide an approximate self-weighted sample, post-stratification weights were calculated. Post-stratification weighting corrects for variations in school and student response rates across sectors and locations and the variable size of the class (or class unit) selected from each sampled school.

The purpose of calculating the weights was to permit inferences from children included in the sample to the populations from which they were drawn, and to have tabulations reflect estimates of population totals. The sample design has implications for the weighting methods used. Post-stratification was done using the 2014 NSW student population frame provided by the Australian Council for Educational Research (ACER). This frame includes the necessary exclusions: (i) non-mainstream schools (such as schools for children with intellectual disabilities, hospital schools, sport schools, and schools for the blind); (ii) schools listed as having a total enrolment of less than 180 students; and (iii) schools located in remote areas of NSW (schools with a MCEETYA Geo-location code 7 or 8).

Overall, there were 508 post-stratification cells defined by a combination of the participating schools (86 schools), sector (Catholic, Government, and Independent), type (primary and secondary), year (Years K, 2, 4, 6, 8 and 10), and sex (male and female). The post-stratification weights for each cell were calculated as a combination of the school weight (the number of children enrolled in the school compared to the total enrolment and number of responding schools within a given stratum) and the student level weight (the representativeness of a child of a given sex of the number of enrolled students of that sex at that year level in the school).

With post-stratification, weights were adjusted so that they sum to the known population totals at the strata, sex and year levels (total population size = 485,015 after omitting the school selection criteria exclusions). If a school had less than six participating students of a particular sex in a year group, then the data were collapsed across sexes. If the total number of participating students at that year level was still less than six, then the data were collapsed across the same year in another school from the same stratum.

Data presentation

The data are presented separately for primary schoolchildren (i.e., Years K, 2, 4 and 6) and secondary schoolchildren (i.e., Years 8 and 10). For each variable of interest, the best descriptive value (mean, median or proportion of children in a specific category) was calculated. For most of the continuous variables, the median was chosen as many of the distributions were skewed. For each variable of interest, comparisons were conducted across the following demographic characteristics:

(i) *across year groups for boys and girls separately,*

(ii) *across locality (urban versus rural) for boys and girls separately,*

(iii) *across tertiles of SES for boys and girls separately,*

(iv) *across cultural background strata for boys and girls separately, and*

(v) *across BMI categories for boys and girls separately.*

Statistical analyses

Data analyses were performed using SAS Enterprise Guide version 7.1 and SAS version 9.4 (SAS Institute Inc., Cary, NC, USA). Complex sampling was accounted for by specifying school type and sector as stratification variables and school ID as the primary sampling unit, and utilising post-stratification weights. PROC SURVEYFREQ was used to calculate proportions of categorical variables. Rao-Scott chi-squared tests[35] were used to test significance of differences by sex, urban/rural region, SES, cultural background and BMI category. For continuous variables, PROC SURVEYMEANS was used to estimate means and quantiles. Analysis of change between SPANS 2010 and SPANS 2015 was conducted using the same methods and adding survey year as a domain variable. In previous years, these analyses were conducted using PROC SURVEYFREQ to calculate the chi square goodness of fit test for binary variables, and PROC NPAR1WAY to calculate the Kruskal Wallis test for continuous variables. Both types of change analyses were used in SPANS 2015 to ensure consistency of results across all SPANS surveys.

SUMMARY

The administration, instruments and protocols of the SPANS 2015 are consistent with previous SPANS (1997, 2004 and 2010). The prevalence estimates are based on robust (valid and reliable) indicators for population surveillance of children's weight and weight-related behaviours.

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CHAPTER 3: SURVEY RESPONSE RATES AND REPRESENTATIVENESS

SNAPSHOT: SCHOOL & STUDENT PARTICIPATION

84
schools participated (primary = 42, secondary = 42)

- **84 schools** participated (primary = 42, secondary = 42)
- **School response rate** was **43.9%** (primary = 39%, secondary = 49%)
- A total of **7,557 students** participated (51.5% girls, 48.5% boys)
- **Student response rate** was **61.8%** (primary = 67.9%, secondary = 51.3%)
- The sample was representative of **NSW children age 5-16 years** in terms of **locality (urban/rural), socio-economic status** and **school sector**. In primary schools, children from English-speaking backgrounds were slightly over-represented.

SCHOOL RESPONSE RATES

PRIMARY SCHOOLS

In total, 42 primary schools were required to participate in the survey (29 Government, 9 Catholic and 4 Independent) to fulfil sampling requirements. The Australian Council for Educational Research supplied a random sample of 42 schools, each with two matched (by education sector, location, gender, size) replacement schools. The first replacement school was approached if the original school in the list declined; subsequently, the second replacement school was approached if the first replacment school declined.

Nineteen schools in the first group accepted (15 Government, 2 Catholic, 2 Independent); 12 first replacement schools accepted (7 Government, 4 Catholic, 1 Independent) and 10 second replacement schools accepted (6 Government, 3 Catholic, 1 Independent).

In total, 63 primary schools declined or did not respond to the invitation (42 Government, 14 Catholic, 7 Independent). Of those 63 schools, 24 were the original schools selected (15 Government, 7 Catholic, 2 Independent); 19 were first replacement schools (13 Government, 4 Catholic, 2 Independent) and 14 were second replacement schools (9 Government, 3 Catholic, 2 Independent). Six school lines were exhausted (i.e., all three schools declined) so schools with similar characteristics (education sector, location, gender, size) within the existing sampling frame were approached to participate, to fulfil the sampling requirements.

Table 3.1 shows the number of primary schools approached and the response rate by education sector. For each education sector, the school response rates were low (≤40%). The overall response rate for primary schools was 39.4% (41/104).

Table 3.1 Primary school response rates by education sector (numbers)

	Education sector			
	Government	**Catholic**	**Independent**	**Overall**
Required (n)	***29***	***9***	***4***	***42***
Approached (n)	70	23	11	104
Declined (n)	42	14	7	63
Accepted (n)	28	9	4	41
Response rate (%)	**40.0**	**39.1**	**36.4**	**39.4**

SECONDARY SCHOOLS

In total, 42 secondary schools were required to participate in the survey (25 Government, 11 Catholic and 6 Independent) to fulfil sampling requirements. The Australian Council for Educational Research supplied a random sample of 42 schools, each with two matched (by education sector, location, gender, size) replacement schools. The first replacement school was approached if the original school in the list declined; subsequently, the second replacement school was approached if the first replacment school declined.

Twenty-three schools in the first group of schools approached accepted (15 Government, 6 Catholic, 2 Independent); 11 first replacement schools accepted (9 Government, 0 Catholic, 2 Independent) and 11 second replacement schools accepted (5 Government, 5 Catholic, 1 Independent).

In total, 47 secondary schools declined or did not respond to the invitation (24 Government, 13 Catholic, 10 Independent). Of those 47 schools, 18 were the original schools selected, (11 Government, 5 Catholic, 2 Independent); 16 were first replacement schools (6 Government, 7 Catholic, 3 Independent) and 13 were second replacement schools (7 Government, 1 Catholic, 5 Independent).

Table 3.2 shows the number of secondary schools approached and the response rate by education sector. The school response rates ranged from 33% (Independent) to 55% (Government). The overall response rate for secondary schools was 48.9% (45/92).

Table 3.2 Secondary school response rates by education sector

	Education sector			
	Government	Catholic	Independent	Overall
Required (n)	***25***	***11***	***6***	***42***
Approached (n)	53	24	15	92
Declined (n)	24	13	10	47
Accepted (n)	29	11	5	45
Response rate (%)	**54.7**	**45.8**	**33.3**	**48.9**

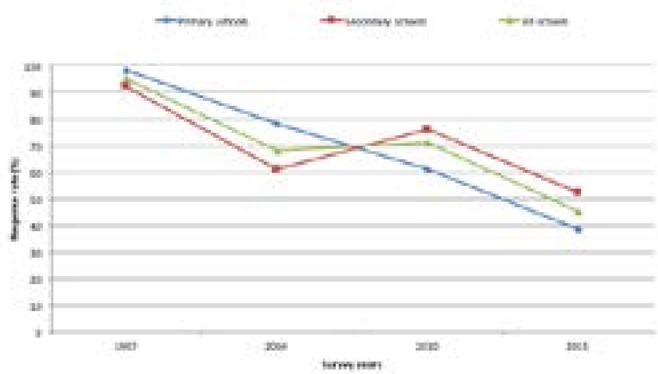
Overall school response rate

In total, 84 schools were needed to achieve the required student sample size. There were issues with schools not responding to invitations in a timely manner (24% provided no response after 5-6 contact attempts over one month) and in these instances the next school in the sequence was approached. Three Government and two Catholic high schools provided late acceptances, which increased the number of schools in these education sectors beyond those required. The overall school response rate for SPANS 2015 was 44% (86/196).

School recruitment issues

School level response rates were much higher in previous SPANS – approximately 95% in 1997, 80% in 2004, and 60% in 2010 – compared with only 44% of schools that agreed to participate in 2015. Figure 3.1 shows the trend in school response rates for primary, secondary and all schools, across the survey years.

Figure 3.1 School response rates SPANS between 1997-2015



Reasons for declining to participate in SPANS were collected during the recruitment phase by email correspondence and are presented in Table 3.3. More than one-third of schools stated they were either ‘overwhelmed’ by research (Too many people approaching school to conduct surveys), involved in other school-based surveys, or too busy to participate. Almost one-quarter of schools did not respond to the invitation to participate in SPANS, despite multiple attempts to ascertain their interest.

Table 3.3 Reasons schools declined to participate in SPANS 2015

Reason	Responses (%)*
Not stated	35.0%
No response from school	24.3%
Too busy	18.4%
Too many people approaching school to conduct surveys	17.5%
Not interested	4.9%
Too disruptive to classes	2.9%
Want their own data	1.9%
Parents are getting many surveys and are not happy to fill in more forms	1.0%
Too much time involved on behalf of the school	1.0%
Too sensitive an issue	0.0%

** Schools could give multiple response*

In order to improve recruitment rates, the Department of Education and Communities was approached and agreed to SPANS offering participating schools half-day funding ($AUD205) for relief from teaching for school liasion teachers in recognition of time spent distributing and collecting consent forms. Schools were reimbursed after the school visit.

STUDENT PARTICIPATION RATES

Table 3.4 shows the participation rates and number of boys and girls in each year group who were invited to participate, and who declined, were absent on assessment day, or participated. The overall student participation rate was 61.8% and overall absenteeism on the day of the survey was 3.3%. Slightly more girls participated in the survey compared with boys (primary school girls = 52.1% and secondary school girls = 50.2%).

Primary school

The participation rate for primary school students was 68%. The highest response rate was among Year 4 girls. Response rates were slightly higher among girls in Years K, 2 and 4, compared with boys.

Secondary school

The response rates for secondary school students was 51%. Response rates were higher among Year 8 students and the lowest response rates were among Year 10 girls (44%).

Table 3.4 Student participation rates by sex and year group

Year group	Class enrolments	Declined	Absent	Participated	Participation rate (%)
Year K					
Boys	819	238	21	560	68.4%
Girls	832	225	17	590	70.9%
Total	*1,651*	*463*	*38*	*1,150*	***69.7%***
Year 2					
Boys	928	282	30	616	66.4%
Girls	1,007	287	30	690	68.5%
Total	*1,935*	*569*	*60*	*1,306*	***67.5%***
Year 4					
Boys	985	313	21	651	66.1%
Girls	1,048	246	24	778	74.2%
Total	*2,033*	*559*	*45*	*1,429*	***70.3%***
Year 6					
Boys	1,064	346	34	684	64.3%
Girls	1,032	331	31	670	64.9%
Total	*2,096*	*677*	*65*	*1,354*	***64.6%***
Year 8					
Boys	1,114	468	38	608	54.6%
Girls	1,132	432	32	668	59.0%
Total	*2,246*	*900*	*70*	*1,275*	***56.8%***
Year 10					
Boys	1,141	541	54	546	47.9%
Girls	1,132	566	70	496	43.8%
Total	*2,273*	*1,107*	*124*	*1,042*	***45.8%***
Primary	7,715	2,268	208	5,239	67.9%
Secondary	4,519	2,007	194	2,318	51.3%
OVERALL	**12,234**	**4,275**	**402**	**7,556**	**61.8%**

Table 3.5 Number and percentage of boys and girls in each school year

	Year K	Year 2	Year 4	Year 6	Year 8	Year 10	Total
Boys (n)	560	616	651	684	608	546	3,665
(%)	*15.3%*	*16.8%*	*17.8%*	*18.7%*	*16.6%*	*14.9%*	*48.5%*
Girls (n)	590	690	778	670	668	496	3,892
(%)	*15.2%*	*17.7%*	*20.0%*	*17.2%*	*17.2%*	*12.7%*	*51.5%*
Total (n)	1,150	1,306	1,429	1,354	1,276	1,042	7,557
(%)	*15.2%*	*17.3%*	*18.9%*	*17.9%*	*16.9%*	*13.8%*	*100.0%*

Student distribution

Table 3.5 shows the number and percentage of boys and girls in each school year. Overall, 48.5% of participants were boys. The distribution of students differed across each year group, with approximately 15-20% of the sample comprising each primary school year group, and 13-17% of the sample comprising each secondary school year group.

The mean ages (SD) of students in Years K, 2, 4, 6, 8 and 10 were 5.4 (0.4), 7.3 (0.5), 9.3 (0.5), 11.3 (0.4), 13.4 (0.4) and 15.4 (0.4) years, respectively. Overall, 76% of students attended urban schools and 88% reported that English was the main language spoken at home.

Of primary school students, 75% attended Government schools, 19% attended Catholic schools and 6% attended Independent schools. Among secondary schools, 52% students attended Government schools, 33% attended Catholic schools and 16% attended Independent schools.

REPRESENTATIVENESS OF THE SAMPLE

SPANS 2015 was designed so that the school students who participated would be representative of the NSW population of school students, in terms of type of school, rurality and socio-economic status. Survey data were weighted to reflect the *Estimated Resident Population (ERP)* of children age 5, 7, 9, 11, 13 and 15 years (i.e., modal ages of children in Years K, 2, 4, 6, 8 and 10) in NSW.

Table 3.6 shows the demographic characteristics of the weighted SPANS population compared with the NSW student population for Years K, 2, 4, 6, 8 and 10. The Australian Council for Educational Research provided the ERP for students in Years K, 2, 4, 6, 8 and 10 for locality (based on Ministerial Council for Employment Education Training and Youth Affairs Geo-location), socio-economic quintile (based on the Australian Bureau of Statistics SEIFA Index of Education and Occupation) and educational sector. The Australian Bureau of Statistics 2011 Census of Population and Housing (primary school included children age 5, 7, 9 and 11 years; secondary school included children age 13 and 15 years) was used for cultural background (based on Australian System for Classification of Languages).[1]

The differences between the SPANS 2015 sample and the NSW student population were tested using the one-way Rao and Scott chi-squared test, which takes account of the stratified, cluster-sampled survey design of SPANS.[2]

Overall, the post-stratification weighted SPANS sample was representative of the NSW population for children age 5-16 years in terms of rurality, socio-economic background and education sector. Among primary schools, the distribution of students by cultural background indicated students from English-speaking backgrounds were slightly over-represented. For the secondary school sample, the proportions for each cultural background were similar to the NSW population.

Table 3.6 Number and percentage of boys and girls by place of residence, SES, cultural background and education sector for SPANS (weighted) and the NSW population

School level	SPANS N (%)*	NSW population N (%)	Difference (X^2 , Pvalue)
PRIMARY SCHOOLS			
Rurality[a]			
Urban	248,588 (78.1)	241,011 (75.7)	$X_1^2 = 0.12$
Rural	69,788 (21.9)	77,365 (24.3)	P = 0.73
Socioeconomic status[a]			
Quintile 1 (lowest)	46,272 (14.5)	47,155 (14.8)	$X_2^2 = 1.31$
Quintile 2	44,493 (14.0)	60,359 (19.0)	P = 0.86
Quintile 3	70,561 (22.2)	74,035 (23.3)	
Quintile 4	72,072 (22.6)	65,766 (20.7)	
Quintile 5 (highest)	84,978 (26.7)	71,018 (22.3)	
Cultural background[b]			
English-speaking	274,904 (87.7)	270,074 (80.9)	$X_4^2 = 12.41$
European	4,591 (1.5)	12,617 (3.8)	P = 0.01
Middle Eastern	13,040 (4.1)	16,151 (4.8)	
Asian	20,210 (6.5)	31,605 (9.5)	
Other[c]	566 (0.2)	7,540 (1.0)	
Education sector[a]			
Government	222,509 (69.9)	222,509 (69.9)	$X_2^2 = 0$
Catholic	64,616 (20.3)	64,616 (20.3)	P =1.0
Independent	31,251 (9.8)	31,251 (9.8)	
SECONDARY SCHOOLS			
Place of residence[a]			
Urban	121,246 (72.8)	125,479 (75.3)	$X_1^2 = 0.16$
Rural	45,393 (27.2)	41,160 (24.7)	P = 0.51
Socioeconomic status[a]			
Quintile 1 (lowest)	32,825 (19.7)	25,182 (15.1)	$X_2^2 = 3.27$
Quintile 2	37,046 (22.2)	31,360 (18.8)	P = 0.51
Quintile 3	36,314 (21.8)	38,284 (23.0)	
Quintile 4	23,947 (14.4)	33,645 (20.2)	
Quintile 5 (highest)	36,508 (21.9)	38,169 (22.9)	
Cultural background[b]			
English-speaking	142,067 (85.3)	137,377 (81.4)	$X_4^2 = 5.91$
European	2,122 (1.3)	4,721 (2.8)	P = 0.21
Middle Eastern	5,118 (3.1)	7,789 (4.6)	
Asian	15,275 (9.2)	17,061 (10.1)	
Other[c]	2,056 (1.2)	1,862 (1.1)	
Education sector[a]			
Government	101,173 (60.7)	101,173 (60.7)	$X_2^2 = 0$
Catholic	41,707 (25.0)	41,707 (25.0)	P = 1.0
Independent	23,759 (14.3)	23,759 (14.3)	

* *Weighted data*
a *Data Source: Australian Council for Educational Research NSW population derived groups (note these are not exact quintiles).*
b *Data Source: Australian Bureau of Statistics 2011 Census of Population and Housing; primary school children included children age 5, 7, 9 and 11 years, secondary school included children age 13 and 15 years.*
c *Other includes Pacific Island and African languages.*

SUMMARY

In summary, the school response rate of 44% in SPANS 2015 was substantially lower compared with previous SPANS conducted in 1997, 2004 and 2010. Many schools reported they were too busy and were overwhelmed by concurrent research being conducted in schools. Within schools that agreed to participate, and with the exception of Year 10, the student participation rates for each year group surveyed were slightly higher in 2015 than in 2010, with an overall participation rate of 62% (68% in primary and 51% in secondary schools). The rate of absenteeism on the day of the survey was 3%.

There is no consensus for minimally-acceptable response rates in research studies among schools, however a response rate of 60% is considered acceptable.[3] SPANS response rates are comparable to, or higher than, other national and international school-based surveys of children.[4, 5] The demographic characteristics of the SPANS sample were very similar to the NSW population overall, thus indicating the findings of SPANS 2015 are likely to be generalisable to schoolchildren of the same ages in NSW.

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CHAPTER 4: WEIGHT STATUS

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5-16 YEARS

24.5%
of children and adolescents were overweight or obese

13.9%
of children and adolescents had abdominal obesity

73%
of parents of children in Years K, 2 and 4 in the overweight BMI category perceived their child to be *'about the right weight'*

2015

- **24.5% of children and adolescents were overweight or obese**
  - Children and adolescents from low (33.7%) and middle (23.4%) SES backgrounds were more likely to be in the overweight or obese BMI categories, compared with children from high SES backgrounds (19.3%)
  - Children and adolescents from Middle Eastern cultural backgrounds (42.3%) were more likely to be overweight or obese, compared with children from English-speaking backgrounds (23.3%)
- **13.9% of children and adolescents had abdominal obesity (waist-to-height ratio ≥0.5)**
  - The prevalence was higher among boys (15.6%), compared with girls (12.2%)
- **73% of parents of children in Years K, 2 and 4 in the overweight BMI category perceived their child to be *'about the right weight'***
- **30% of parents of children in Years K, 2 and 4 in the obesity BMI category perceived their child to be *'about the right weight'***

SIGNIFICANT CHANGES BETWEEN 2010-2015

- **Overall, the prevalence of overweight/obesity increased among children and adolescents from:**
  - Low SES backgrounds from 27.3% in 2010 to 33.7% in 2015
  - Middle SES backgrounds from 22.4% in 2010 to 23.4% in 2015
- **Overall, the prevalence of abdominal obesity increased from 11.1% in 2010 to 13.9% in 2015.**

  Changes by socio-demographic characteristics were observed among children and adolescents from:
  - Urban areas from 11.3% in 2010 to 14.3% in 2015
  - Low SES backgrounds from 14.1% in 2010 to 19.9% in 2015
  - English-speaking backgrounds from 10.2% in 2010 to 13.2% in 2015
  - Middle Eastern cultural backgrounds from 21.3% in 2010 to 30.3% in 2015

CONTEXT

The high rates of overweight and obesity during childhood and adolescence continue to be a major public health issue.[1] Evidence shows that overweight, and obesity in particular, during childhood tends to track into adulthood[2] and those children who remain overweight or obese as adults are at an increased risk of developing chronic diseases including type 2 diabetes, cardiovascular disease and fatty liver disease.[3] Risk factors for many chronic diseases are present in children and adolescents who are overweight.[4]

At a population level, weight status is best assessed using the body mass index (BMI; i.e., weight/height^2). For growth and maturation reasons, children's BMI is age-sex adjusted and mapped to adult definitions of overweight (≥25kg/m^2) and obese (≥30kg/m^2).[5] For BMI, we report the prevalence of thinness (Grade 1, equivalent to 18kg/m^2), healthy weight, overweight, obesity and combined overweight and obesity. Among children in Years K, 2, and 4, we report on parents' perception of their child's weight status compared with their child's measured BMI.

Similarly, the waist circumference is another important measure of weight status, which provides good information on cardio-metabolic risk associated with abdominal obesity. To accommodate differences in height, the waist circumference is adjusted to calculate a waist-to-height ratio. A waist-to-height ratio greater than or equal to 0.5 is considered an indicator of cardiovascular risk clustering in children and adolescents.[6] For abdominal obesity, we report the prevalence of waist-to-height ratio ≥0.5.

The percentiles, mean, standard deviation and number of valid cases for height, weight, BMI and waist girth for boys and girls in each year group are provided in the Appendix.

This chapter reports on the weight status of children (i.e., Years K, 2, 4 and 6) and adolescents (i.e., Years 8 and 10), according to their measured BMI and waist-to-height ratio by sex, year group and socio-demographic characteristics. The 2010 prevalence estimates of weight status are included for comparison. The prevalence estimates (%) need to be interpreted along with their standard errors (SE); a large standard error means a less precise estimate.

PRIMARY SCHOOL

Children's height (m), weight (cm) and waist circumference (cm) were measured at school by trained field officers. Body mass index was calculated as weight divided by height squared (kg/m^2). Values were categorised according to the International Obesity Taskforce cut points for thinness (Grade 1, equivalent to 18kg/m^2), healthy weight, overweight and obesity. Waist-to-height ratio was calculated as waist divided by height and values dichotomised as <0.5 or ≥0.5.

BODY MASS INDEX (BMI)

Table 4.1 and Figure 4.1 show the prevalence of thinness, healthy weight, overweight, obesity and combined overweight and obesity among primary school children stratified by sex and year group, and in 2010 for comparison. Figure 4.2 shows the prevalence of combined overweight and obesity among primary school children in 2010 and 2015 stratified by sex.

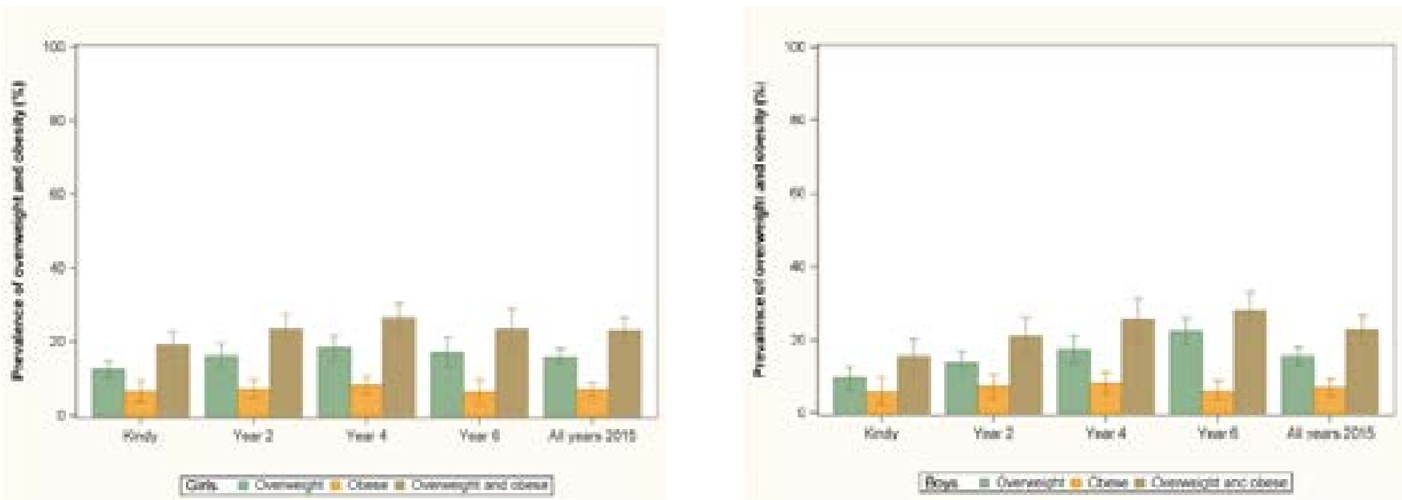
Overall, the prevalence of overweight, obesity and combined overweight and obesity among children was 15.8%, 7.1% and 22.9% respectively. Overall, the prevalence of combined overweight and obesity has not significantly changed between 2010 and 2015.

Table 4.1 Prevalence of weight status by BMI category among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

Characteristic	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Thin	6.5 (0.9)	5.7 (0.6)	7.3 (0.8)	6.7 (0.7)	6.5 (0.4)	6.8 (0.5)
Healthy weight	76.1 (1.7)	71.9 (1.6)	66.6 (2.0)	67.3 (2.2)	70.6 (1.5)	69.2 (1.2)
Overweight	11.1 (0.9)	15.0 (1.1)	17.9 (1.4)	19.7 (1.6)	15.8 (0.9)	17.2 (0.8)
Obese	6.3 (1.4)	7.4 (1.2)	8.2 (1.1)	6.3 (1.1)	7.1 (0.9)	6.7 (0.7)
Overweight + obese	17.5 (1.6)	22.4 (1.8)	26.1 (2.1)	26.0 (2.2)	22.9 (1.6)	23.9 (1.3)
GIRLS						
Thin	6.5 (1.1)	6.1 (1.0)	7.3 (1.0)	8.9 (1.1)	7.2 (0.6)	7.4 (0.7)
Healthy weight	74.2 (1.8)	70.3 (1.7)	66.1 (1.9)	67.6 (2.9)	69.7 (1.5)	68.1 (1.4)
Overweight	12.6 (1.1)	16.3 (1.6)	18.4 (1.7)	17.2 (2.0)	16.0 (1.0)	17.7 (0.9)
Obese	6.6 (1.5)	7.3 (1.2)	8.2 (1.2)	6.4 (1.7)	7.1 (0.9)	6.9 (0.8)
Overweight + obese	19.2 (1.8)	23.6 (2.0)	26.6 (2.0)	23.6 (2.7)	23.2 (1.7)	24.6 (1.4)
BOYS						
Thin	6.4 (1.1)	5.3 (1.0)	7.3 (1.2)	4.5 (0.9)	5.9 (0.5)	6.3 (0.6)
Healthy weight	77.9 (2.6)	73.6 (2.5)	67.0 (2.9)	67.1 (2.3)	71.5 (1.9)	70.3 (1.4)
Overweight	9.6 (1.5)	13.6 (1.6)	17.4 (1.9)	22.2 (1.9)	15.6 (1.2)	16.8 (1.0)
Obese	6.1 (1.8)	7.4 (1.7)	8.3 (1.5)	6.2 (1.2)	7.0 (1.2)	6.6 (0.8)
Overweight + obese	15.7 (2.3)	21.1 (2.5)	25.7 (2.8)	28.4 (2.4)	22.6 (2.0)	23.3 (1.5)

a *Indicates statistically significant difference at P < 0.05 between overweight+obese proportions between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each BMI category.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

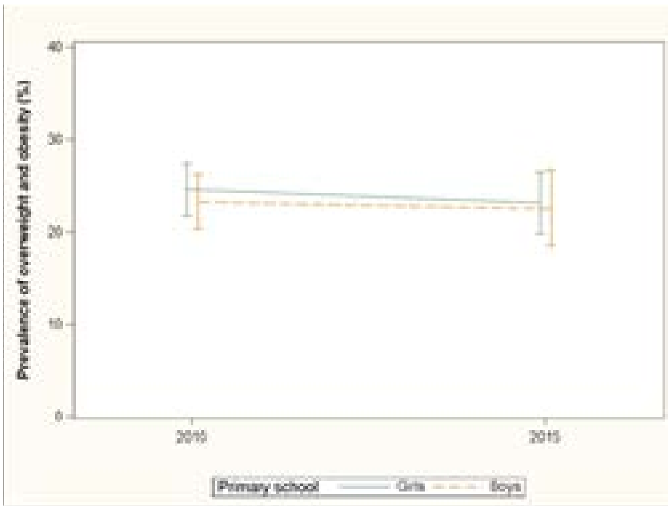
Figure 4.1 Prevalence of weight status by BMI category among children in primary school, by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that over one in five (22.9%) children in primary school were in the overweight or obese BMI categories. Table 4.2 and Figure 4.3 show the prevalence of combined overweight and obesity by sex and year group, socio-demographic characteristics, and BMI category in 2015, and in 2010 for comparison.

Figure 4.2 Prevalence of combined overweight and obesity among boys and girls in primary school in 2010 and 2015 (%, 95%CI)



Locality

2015: The prevalence of combined overweight and obesity was significantly lower among boys from rural areas (17.3%), compared with boys from urban areas (24.2%).

Change between 2010-2015: The prevalence of combined overweight and obesity significantly increased among children from rural areas from 17.4% in 2010 to 21.1% in 2015; and among girls from rural areas from 16.5% in 2010 to 25.5% in 2015.

Socio-economic status

2015: Overall, the prevalence of combined overweight and obesity was significantly higher among children from low SES backgrounds (34.9%), compared with children from high SES (18.9%) backgrounds. The prevalence was significantly higher for boys from low SES (36.2%), compared with boys from high SES (18.8%) backgrounds; and among girls from low SES (33.5%), compared with girls from high SES (19.0%) backgrounds.

Change between 2010-2015: Overall, the prevalence of combined overweight and obesity significantly increased among children from low SES backgrounds from 29.1% in 2010 to 34.9% in 2015.

Cultural background

2015: Overall, the prevalence of combined overweight and obesity was significantly higher among children from Middle Eastern cultural backgrounds (42.9%), compared with children from English-speaking backgrounds (21.8%). The prevalence was significantly higher among girls from Middle Eastern cultural backgrounds (35.7%) and significantly lower among girls from Asian cultural backgrounds (16.5%), compared with girls from English-speaking backgrounds (22.9%). The prevalence was significantly higher among boys from Middle Eastern cultural backgrounds (49.9%), compared with boys from English-speaking backgrounds (20.6%).

Change between 2010-2015: The prevalence of combined overweight and obesity significantly decreased among children from Asian cultural backgrounds from 27.7% in 2010 to 21.1% in 2015.

Table 4.2 Prevalence of combined overweight and obesity among children in primary school by sex, year group, socio-demographic characteristics in 2015, and in 2010 for comparison (%, SE)

Characteristic	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Locality						
Urban (ref)	18.0 (1.8)	22.7 (2.1)	27.4 (2.7)	25.9 (2.6)	23.3 (2.0)	24.8 (1.4)
Rural	15.5 (2.8)	21.0 (2.0)	22.1 (2.2)	26.4 (3.3)	21.4 (1.7)	**17.4 (1.3) b**
SES						
Low	**27.8 (4.7) a**	**35.4 (2.3) a**	**36.1 (6.8) a**	**40.6 (4.5) a**	**34.9 (4.0) a**	29.1 (2.1)
Middle	14.5 (1.5)	20.5 (1.9)	24.2 (2.1)	22.6 (2.3)	20.5 (1.3)	21.9 (1.6)
High (ref)	14.8 (1.4)	17.7 (2.6)	22.5 (2.3)	21.5 (3.0)	18.9 (1.9)	21.6 (1.9)
Cultural background						
English-speaking (ref)	17.1 (1.4)	21.6 (1.7)	24.3 (1.6)	24.3 (2.0)	21.8 (1.4)	22.3 (1.1)
European	14.1 (8.0)	23.0 (10.6)	38.1 (14.6)	34.1 (13.0)	26.3 (6.2)	30.8 (6.9)
Middle Eastern	**28.1 (6.7) a**	**38.0 (5.5) a**	**57.0 (8.1) a**	**48.9 (8.5) a**	**42.9 (4.9) a**	38.5 (4.2)
Asian	12.1 (4.6)	21.4 (4.9)	31.2 (5.8)	25.6 (5.2)	21.1 (2.6)	**27.7 (2.1) b**
GIRLS						
Locality						
Urban (ref)	19.4 (2.0)	22.7 (2.3)	26.7 (2.5)	21.7 (3.0)	22.5 (1.9)	25.5 (1.4)
Rural	18.5 (4.3)	27.2 (4.0)	26.2 (2.9)	30.2 (5.5)	25.5 (3.3)	**16.5 (3.2) b**
SES						
Low	24.4 (4.7)	**32.9 (4.0) a**	**35.9 (5.6) a**	**41.8 (5.9) a**	**33.5 (3.9) a**	27.7 (2.0)
Middle	18.7 (3.2)	24.6 (3.2)	26.1 (2.9)	19.7 (3.6)	22.2 (2.3)	23.2 (2.0)
High (ref)	17.1 (2.3)	19.1 (2.8)	22.1 (2.5)	18.0 (2.9)	19.0 (1.9)	23.2 (2.8)
Cultural background						
English-speaking (ref)	19.9 (2.0)	24.0 (2.1)	24.9 (1.8)	23.0 (2.8)	22.9 (1.7)	24.0 (1.4)
European	22.4 (11.9)	36.1 (17.6)	49.8 (16.4)	13.2 (8.7)	27.6 (7.7)	25.0 (8.1)
Middle Eastern	15.5 (7.8)	25.4 (5.7)	**53.0 (7.0) a**	**48.4 (10.8) a**	**35.7 (3.9) a**	36.6 (6.1)
Asian	11.2 (4.5)	12.8 (4.9)	27.1 (6.8)	19.9 (6.9)	16.5 (2.9) a	22.0 (2.1)

Characteristic	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
BOYS						
Locality						
Urban (ref)	16.5 (2.8)	22.7 (3.0)	28.2 (3.5)	30.2 (2.9)	24.1 (2.5)	24.1 (1.7)
Rural	12.4 (2.5)	15.4 (3.6)	18.1 (3.0) a	22.9 (3.1)	17.4 (1.4) a	18.1 (1.5)
SES						
Low	**31.4 (6.1) a**	**37.6 (4.1) a**	**36.3 (9.5)**	**39.5 (5.7) a**	**36.2 (5.6) a**	30.4 (3.0)
Middle	9.7 (2.2)	16.1 (2.6)	22.0 (2.0)	25.3 (2.7)	18.6 (1.2)	20.7 (1.6)
High (ref)	12.7 (2.4)	16.1 (3.8)	22.9 (3.2)	25.2 (3.8)	18.8 (2.3)	20.2 (1.7)
Cultural background						
English-speaking (ref)	14.3 (1.9)	19.1 (2.4)	23.6 (2.2)	25.6 (2.4)	20.6 (1.5)	20.8 (1.2)
European	na	11.8 (8.4)	27.6 (17.4)	**67.9 (17.5) a**	24.8 (9.1)	37.9 (11.2)
Middle Eastern	**38.0 (12.7) a**	**52.8 (8.6) a**	**61.6 (11.1) a**	**49.2 (15.8)**	**49.9 (10.6) a**	40.1 (5.4)
Asian	13.9 (7.0)	32.4 (9.7)	37.1 (9.6)	31.1 (8.8)	27.7 (4.5)	32.9 (3.9)

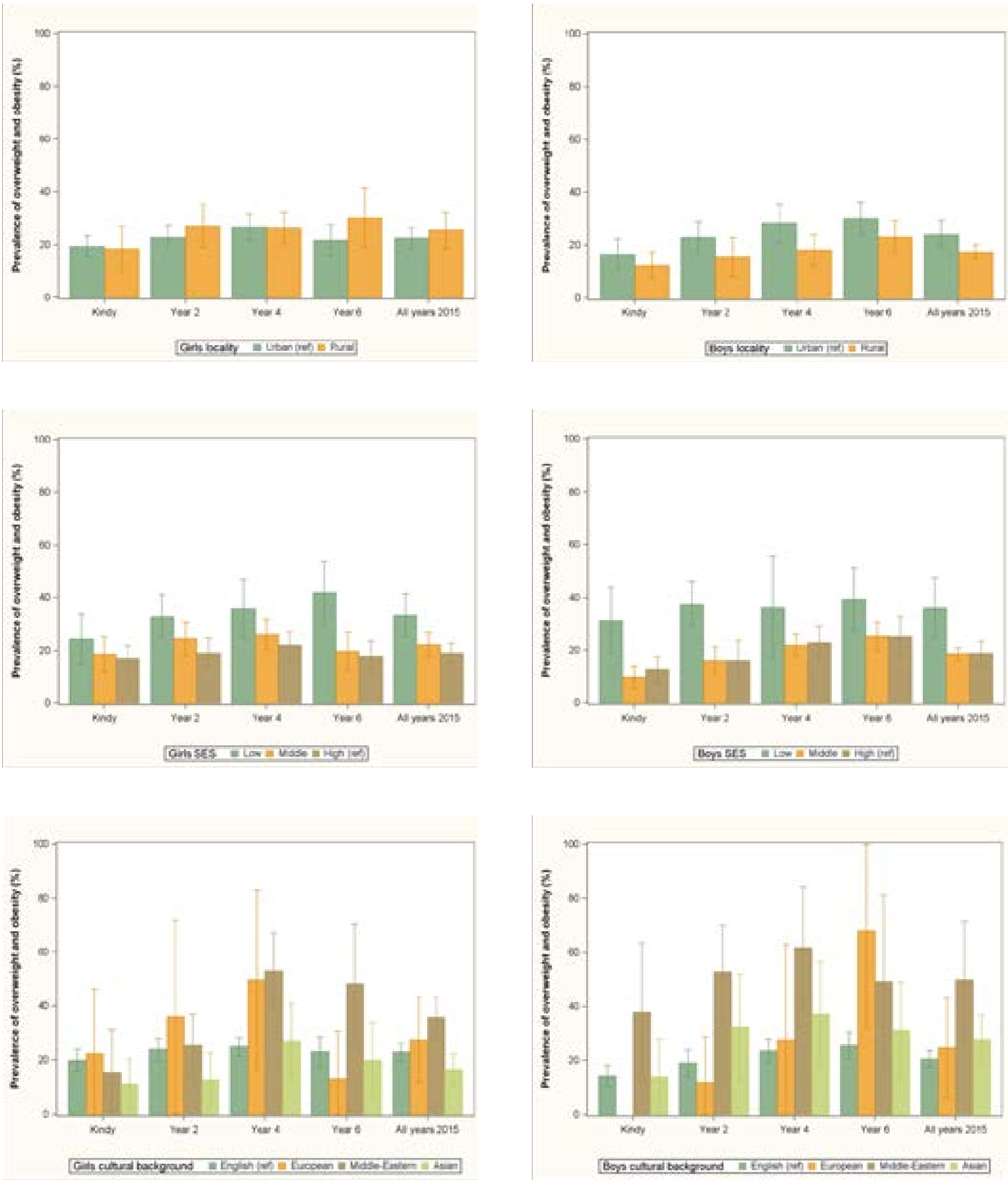
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; and European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background.*

b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 4.3 Prevalence of combined overweight and obesity among children in primary school by sex, year group and, socio-demographic characteristics in 2015 (%, 95%CI)



WAIST-TO-HEIGHT RATIO ≥0.5 (ABDOMINAL OBESITY)

Table 4.3 and Figure 4.4 show the prevalence of waist-to-height ratio ≥0.5 among primary school children stratified by sex and year group in 2015, and in 2010 for comparison. Figure 4.5 shows the prevalence of waist-to-height ratio ≥0.5 among children in 2010 and 2015 stratified by sex.

2015: Overall, the prevalence of waist-to-height ratio ≥0.5 among children was 14.3% and was not significantly different between boys and girls. Overall, the prevalence of waist-to-height ratio ≥0.5 among children has not significantly changed between 2010 and 2015.

Table 4.3 Prevalence of waist-to-height ratio ≥0.5 among children in primary school by sex and year group in 2015 and, in 2010 for comparison (%, SE)

Sex	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
All	16.5 (2.2)	11.8 (1.7)	15.2 (1.5)	13.6 (1.6)	14.3 (1.4)	12.1 (1.1)
Girls	18.1 (2.6)	11.8 (1.8)	15.1 (1.6)	9.9 (1.6) a	13.8 (1.4)	11.9 (1.2)
Boys	14.8 (2.5)	11.9 (2.1)	15.2 (1.9)	17.4 (2.3)	14.8 (1.5)	12.2 (1.2)

a *Indicates statistically significant difference at $P < 0.05$ between sex and within year group.*
b *Indicates statistically significant difference at $P < 0.05$ between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 4.4 Prevalence of waist-to-height ratio ≥0.5 among children in primary school, by sex and year group in 2015 (%, 95%CI)

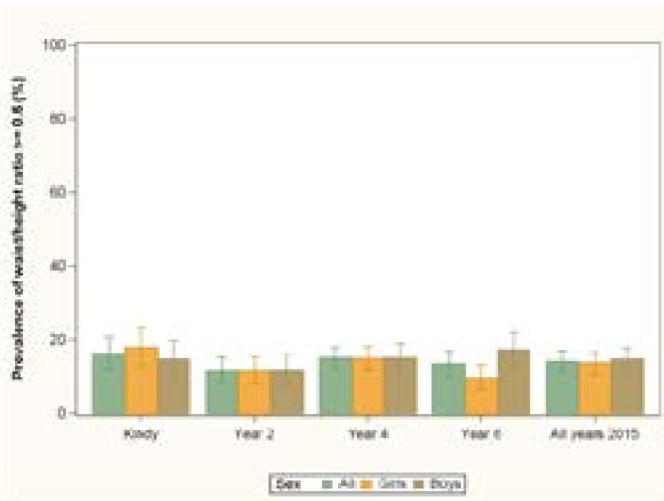
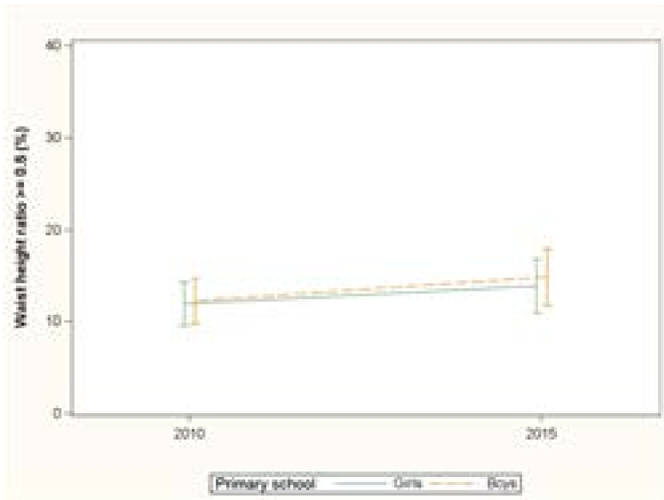


Figure 4.5 Prevalence of waist-to-height ratio ≥0.5 among boys and girls in primary school in 2010 and 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 14.3% of children in primary school have a waist-to-height ratio greater than 0.5, which represents an increased risk of cardio-metabolic complications. Table 4.4 and Figure 4.6 show the prevalence of waist-to-height ratio ≥0.5 among children by sex, year group and socio-demographic characteristics in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of waist-to-height ratio ≥0.5 was significantly higher among boys from urban areas (15.9%), compared with boys from rural areas (11.2%).

Change between 2010-2015: There were no significant changes in waist-to-height ratio ≥0.5 among children from urban or from rural areas between 2010 and 2015.

Socio-economic status

2015: Overall, the prevalence of waist-to-height ratio ≥0.5 was significantly higher among children from low SES backgrounds (23.1%), compared with children from high SES backgrounds (11.5%). The prevalence of waist-to-height ratio ≥0.5 was significantly higher among girls from low SES (21.7%), compared with girls from high SES (10.6%) backgrounds; and among boys from low SES (24.3%), compared with boys from high SES (12.3%) backgrounds.

Change between 2010-2015: Overall, the prevalence of waist-to-height ratio ≥0.5 significantly increased among children from low SES backgrounds, from 15.5% in 2010 to 23.1% in 2015. The prevalence significantly increased among girls from 14.8% in 2010 to 21.7% in 2015, and among boys from 16.2% in 2010 to 24.3% in 2015.

Cultural background

2015: Overall, the prevalence of waist-to-height ratio ≥0.5 was significantly higher among children from Middle Eastern cultural backgrounds (31.8%), compared with their English-speaking peers (13.6%). The prevalence was significantly higher among girls from Middle Eastern cultural backgrounds (26%), compared with girls from English-speaking backgrounds (13.8%); and among boys from Middle Eastern (37.5%) and Asian (19.3%) cultural backgrounds, compared with boys from English-speaking backgrounds (13.3%).

Change between 2010-2015: The prevalence of waist-to-height ratio ≥0.5 significantly increased among children from English-speaking backgrounds from 10.5% in 2010 to 13.6% in 2015.

Table 4.4 Prevalence of waist-to-height ratio ≥0.5 among children in primary school by sex, year group, socio-demographic characteristics in 2015, and in 2010 for comparison (%, SE)

Characteristic	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Locality						
Urban (ref)	17.1 (2.5)	12.6 (2.0)	15.1 (1.9)	14.7 (2.1)	14.9 (1.7)	12.4 (1.2)
Rural	13.8 (4.2)	8.8 (2.1)	15.4 (2.7)	10.1 (1.7)	12.1 (1.4)	9.3 (2.2)
SES						
Low	24.7 (6.0)	**23.8 (2.5) a**	**21.3 (3.7) a**	**22.4 (3.1) a**	**23.1 (3.0) a**	**15.5 (2.1) b**
Middle	13.6 (2.6)	11.1 (2.5)	16.4 (2.6)	9.3 (1.4)	12.5 (1.6)	11.2 (1.5)
High (ref)	14.7 (2.3)	6.8 (1.3)	11.0 (1.7)	13.1 (2.3)	11.5 (1.4)	9.7 (1.5)
Cultural background						
English-speaking (ref)	16.0 (2.1)	11.2 (1.7)	14.4 (1.4)	12.5 (1.6)	13.6 (1.2)	10.5 (0.9) b
European	26.6 (9.2)	na	12.6 (8.2)	14.7 (9.7)	12.5 (3.8)	15.6 (5.0)
Middle Eastern	**34.5 (8.5) a**	**27.3 (3.8) a**	**33.8 (5.2) a**	**32.0 (5.3) a**	**31.8 (2.6) a**	25.3 (3.2)
Asian	12.1 (4.0)	11.7 (5.2)	14.8 (3.9)	10.3 (4.3)	12.3 (2.0)	17.0 (2.3)
GIRLS						
Locality						
Urban (ref)	18.4 (3.1)	12.7 (2.1)	14.5 (2.0)	9.9 (1.9)	14.0 (1.7)	12.4 (1.2)
Rural	16.8 (4.8)	7.8 (2.5)	17.2 (2.7)	9.6 (2.7)	13.0 (2.3)	7.3 (2.8)
SES						
Low	23.8 (5.4)	**21.4 (3.7) a**	**20.6 (3.5) a**	**20.9 (3.7) a**	**21.7 (2.9) a**	**14.8 (2.3) b**
Middle	17.0 (4.4)	**13.1 (2.8) a**	17.1 (2.8)	5.2 (1.4)	13.1 (2.2)	11.7 (1.6)
High (ref)	16.2 (3.1)	6.9 (1.9)	10.7 (2.1)	8.4 (1.9)	10.6 (1.5)	8.9 (1.8)
Cultural background						
English-speaking (ref)	19.0 (2.8)	12.1 (2.0)	15.2 (1.7)	9.1 (1.5)	13.8 (1.5)	10.8 (1.0)
European	12.5 (8.7)	na	na	9.3 (8.2)	6.3 (3.6)	9.7 (5.0)
Middle Eastern	25.3 (10.5)	19.8 (5.1)	**28.9 (6.9) a**	**31.5 (9.8) a**	**26.0 (3.0) a**	23.6 (4.4)
Asian	10.2 (5.2)	3.9 (2.9)	7.5 (3.9)	5.7 (3.8)	7.4 (2.7)	15.0 (3.1)

Characteristic	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
BOYS						
Locality						
Urban (ref)	15.8 (2.9)	12.6 (2.4)	15.7 (2.4)	19.6 (2.8)	15.9 (1.9)	12.5 (1.4)
Rural	10.7 (3.8)	9.7 (3.9)	13.6 (3.5)	**10.5 (2.9) a**	**11.2 (1.2) a**	10.7 (1.7)
SES						
Low	25.6 (7.5)	**25.8 (3.1) a**	**22.1 (5.0) a**	**23.8 (4.8)**	**24.3 (3.6) a**	**16.2 (2.4) b**
Middle	9.8 (2.3)	9.0 (3.5)	15.6 (3.1)	13.0 (2.6)	11.9 (1.7)	10.8 (1.6)
High (ref)	13.3 (2.9)	6.7 (1.8)	11.3 (2.2)	18.1 (3.2)	12.3 (1.7)	10.4 (1.6)
Cultural background						
English-speaking (ref)	13.1 (2.4)	10.3 (1.9)	13.6 (1.6)	16.0 (2.5)	13.3 (1.3)	10.2 (1.1)
European	**50.8 (16.6) a**	na	23.9 (14.6)	23.5 (20.7)	20.0 (7.5)	22.8 (9.9)
Middle Eastern	**41.8 (9.2) a**	**36.0 (7.0) a**	**39.1 (7.1) a**	**32.5 (9.2) a**	**37.5 (5.6) a**	26.7 (3.8)
Asian	15.7 (6.4)	21.8 (10.4)	**25.2 (7.7) a**	14.8 (6.7)	**19.3 (3.5) a**	18.8 (2.5)

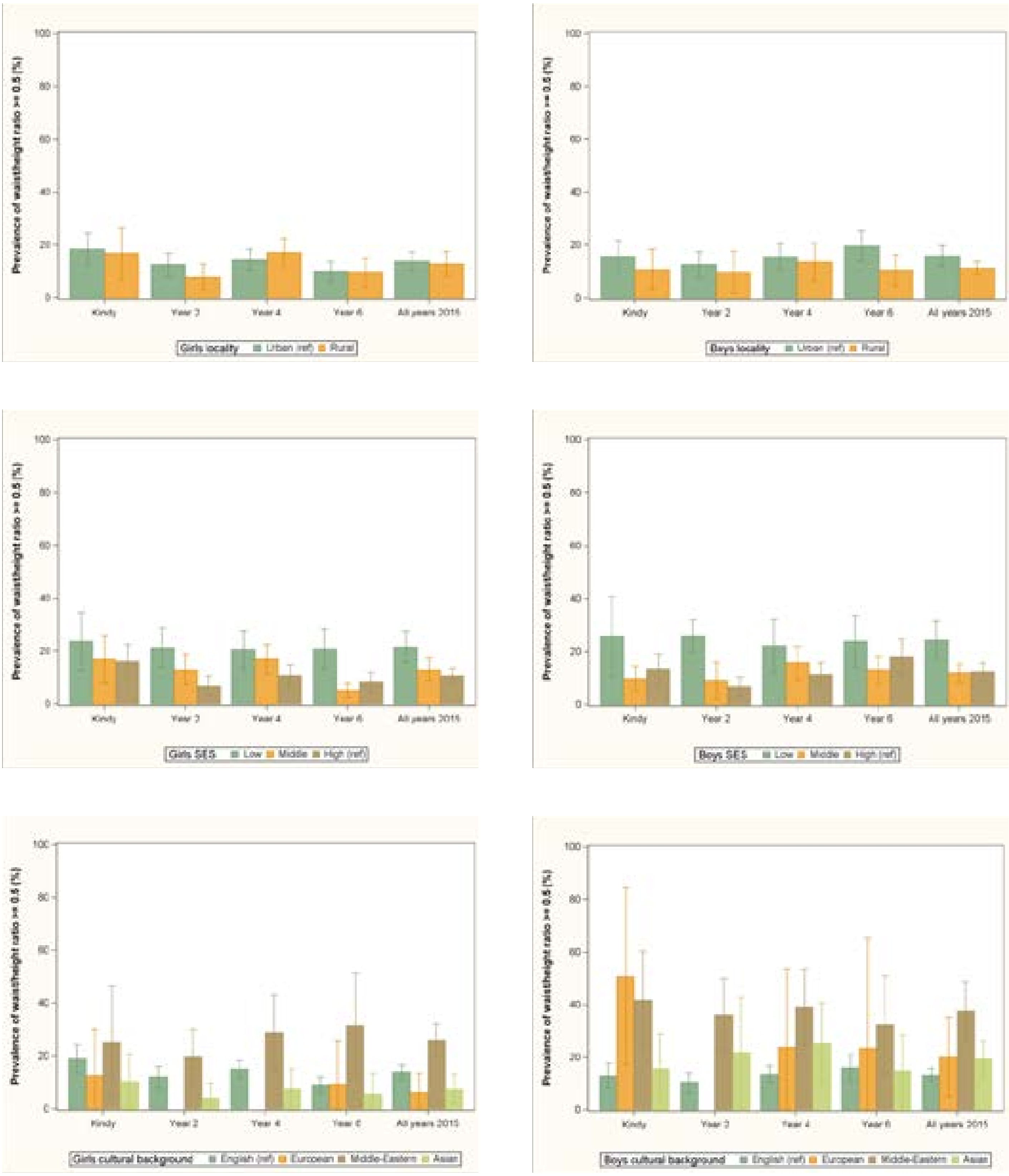
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; and European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background.*

b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 4.6 Prevalence of waist-to-height ratio ≥0.5 among children in primary school by sex, year group, and socio-demographic characteristics in 2015 (%, 95%CI)



PARENTS' PERCEPTION OF THEIR CHILD'S WEIGHT STATUS

Parents of children in Years K, 2 and 4 were asked whether they considered their child to be: very underweight, slightly underweight, about the right weight, slightly overweight, or very overweight. Parents' responses were examined against their child's measured BMI.

Table 4.5 shows the prevalence of parents' perception of their child's weight status, compared with the child's measured BMI. Approximately 85% of parents of children in the healthy weight BMI category perceived their child to be *'about the right weight'*. Almost three quarters (73.2%) of parents of children in the overweight BMI category, and approximately one third (29.9%) of parents of children in the obese BMI category, perceived their child to be *'about the right weight'*.

Overall it appeared parents of girls in the obese BMI category are more likely to perceive them as 'about the right weight' (35.1%), than parents of a boy in the obese BMI category (24.1%).

Table 4.5 Prevalence of parents' (of children in Years K, 2 and 4) perception of their child's weight status versus child's actual weight status (%, 95%CI)

Measured BMI	Parents' perception of their child's weight status				
	Very underweight	Slightly underweight	About the right weight	Slightly overweight	Very overweight
ALL					
Thin	4.9 (1.4)	44.0 (3.0)	50.7 (2.6)	0.4 (0.4)	na
Healthy weight	0.5 (0.1)	13.0 (0.8)	85.0 (0.8)	1.3 (0.2)	0.1 (0.1)
Overweight	0.1 (0.1)	0.6 (0.5)	73.2 (2.6)	25.5 (2.3)	0.6 (0.3)
Obese	0.2 (0.2)	2.2 (0.9)	29.9 (3.0)	58.9 (3.1)	8.8 (2.3)
GIRLS					
Thin	5.5 (2.1)	42.3 (3.6)	52.2 (3.3)	na	na
Healthy weight	0.4 (0.2)	11.8 (1.2)	85.8 (1.2)	1.9 (0.4)	0.1 (0.1)
Overweight	0.2 (0.2)	0.4 (0.4)	72.9 (2.9)	26.0 (2.8)	0.5 (0.4)
Obese	0.4 (0.4)	2.5 (1.4)	35.1 (4.4)	54.8 (4.9)	7.3 (2.8)
BOYS					
Thin	4.2 (1.7)	45.9 (4.7)	49.0 (4.6)	0.8 (0.8)	na
Healthy weight	0.6 (0.2)	14.3 (0.9)	84.3 (0.9)	0.7 (0.2)	0.1 (0.1)
Overweight	na	0.8 (0.6)	73.6 (3.2)	24.9 (3.0)	0.7 (0.5)
Obese	na	2.0 (1.6)	24.1 (5.8)	63.4 (4.6)	10.5 (3.2)

Note: No significance testing was conducted; n/a not applicable

SUMMARY OF THE WEIGHT STATUS OF CHILDREN IN PRIMARY SCHOOL

The table below summarises the findings on the weight status of children in primary school.

Weight indicator	Government policies	SPANS cut point	Prevalence (%, 95%CI) 2010	Prevalence (%, 95%CI) 2015	Significant subgroup findings for 2015* & change between 2010-2015
Combined overweight/ obesity	Reduce overweight and obesity rates of children and young people (age 5-16 years) to 21% by 2015	International Obesity Taskforce definitions[5]	23.9%	22.9%	**2015:** Overall, the proportion of children who were overweight-obese was significantly higher among children from low SES backgrounds and from Middle Eastern cultural backgrounds **Change 2010-15:** Overall, there were no significant changes in combined overweight-obesity between 2010 and 2015. Within subgroups, combined overweight-obesity significantly increased among children in rural areas and significantly decreased among children from Asian cultural backgrounds
Overweight			17.2%	15.8%	
Obese			6.7%	7.1%	
Abdominal obesity (WtHr≥0.5)	There is no specific policy	Waist-to-height ratio (WtHr) ≥0.5[6]	12.1%	14.3%	**2015:** Overall, the proportion of children with a waist-to-height ratio ≥0.5 was significantly higher among children from low SES backgrounds and from Middle Eastern cultural backgrounds **Change 2010-15:** Overall, there were no significant changes in the proportion of children with WtHr≥0.5 between 2010 and 2015. Within subgroups, WtHr≥0.5 significantly increased among children from low SES backgrounds and from English-speaking backgrounds
Parents' perception of their child's weight status as *About the right weight*					
Child is in the overweight BMI category		Nil	70.8%	73.2%	**2015:** Sub-group differences were not assessed **Change 2010-15:** Sub-group differences were not assessed
Child is in the obese BMI category		Nil	26.3%	29.9%	

^{sig}= Indicates statistically significant difference at P < 0.05.

** Comparisons are between rural compared with urban; low and middle SES compared with high SES; and European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background.*

SECONDARY SCHOOL

Adolescents' height (m), weight (cm) and waist circumference (cm) were measured at school by trained field officers. Body mass index (BMI) was calculated as weight divided by height squared (kg/m2). BMI values were categorised according to the International Obesity Taskforce cut points for thinness (Grade 1, equivalent to 18kg/m2), healthy weight, overweight and obesity. Waist-to-height ratio was calculated as waist divided by height and values dichotomised as < 0.5 or ≥ 0.5. The prevalence estimates (%) need to be interpreted along with their standard errors (SE); a large standard error means a less precise estimate.

BODY MASS INDEX (BMI)

Table 4.6 and Figure 4.7 show the prevalence of thinness, healthy weight, overweight, obesity, and combined overweight and obesity among adolescents in secondary school stratified by sex and year group in 2015, and in 2010 for comparison. Figure 4.8 shows the prevalence of combined overweight and obesity among adolescents in 2010 and 2015 stratified by sex.

Overall, the prevalence of overweight, obesity and combined overweight and obesity among adolescents was 21.7%, 5.8% and 27.4% respectively. There were no significant differences between boys and girls. The prevalence of combined overweight and obesity has significantly increased among adolescents, from 22.0% in 2010 to 27.4% in 2015, and among girls, from 19.5% in 2010 to 26.9% in 2015.

Overall, the prevalence of overweight significantly increased among adolescents from 16.9% in 2010 to 21.7% in 2015. The prevalence of overweight significantly increased among girls from 15.5% in 2010 to 21.1% in 2015, and among boys from 18.3% in 2010 to 22.2% in 2015.

Table 4.6 Prevalence of weight status by BMI category among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Thin	7.2 (0.8)	6.0 (0.9)	6.6 (0.6)	7.4 (0.6)
Healthy weight	65.0 (1.7)	67.0 (2.0)	66.0 (1.4)	**70.7 (1.2) b**
Overweight	21.9 (1.5)	21.4 (1.9)	21.7 (1.2)	**16.9 (1.0) b**
Obese	5.9 (1.0)	5.6 (0.9)	5.8 (0.7)	5.1 (0.6)
Overweight + obese	27.8 (2.0)	27.0 (2.2)	27.4 (1.6)	**22.0 (1.2) b**
GIRLS				
Thin	7.4 (1.0)	5.5 (1.2)	6.4 (0.8)	**9.1 (1.0) b**
Healthy weight	65.4 (2.4)	67.9 (3.2)	66.6 (2.1)	71.4 (1.5)
Overweight	21.1 (2.3)	21.2 (2.8)	21.1 (1.8)	**15.5 (1.2) b**
Obese	6.2 (1.3)	5.4 (1.4)	5.8 (0.9)	4.0 (0.7)
Overweight + obese	27.3 (2.7)	26.6 (3.2)	26.9 (2.1)	**19.5 (1.5) b**
BOYS				
Thin	7.1 (1.0)	6.4 (1.2)	6.7 (0.8)	5.7 (0.6)
Healthy weight	64.6 (2.2)	66.1 (2.2)	65.3 (1.7)	**70.0 (1.6) b**
Overweight	22.8 (2.0)	21.6 (2.1)	22.2 (1.5)	**18.3 (1.3) b**
Obese	5.6 (1.3)	5.9 (1.0)	5.7 (0.9)	6.1 (0.8)
Overweight + obese	28.4 (2.6)	27.5 (2.3)	27.9 (2.0)	24.3 (1.7)

a *Indicates statistically significant difference at P < 0.05 between overweight+obese proportions between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each BMI category.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 4.7 Prevalence of weight status by BMI category among adolescents in secondary school, by sex and year group in 2015 (%, 95%CI)

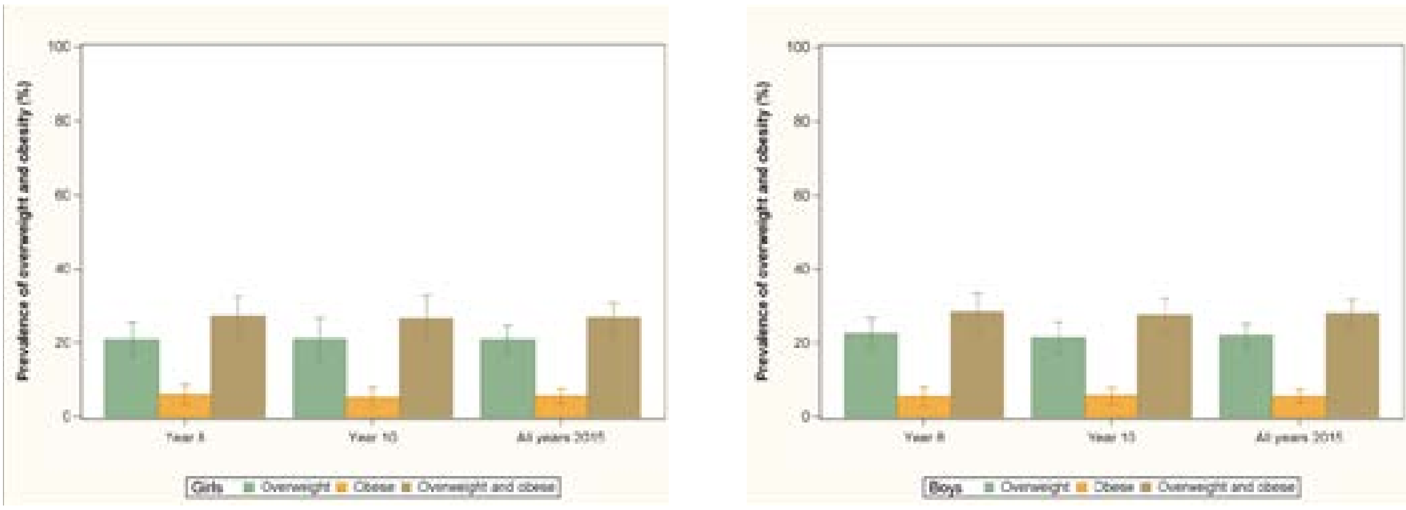
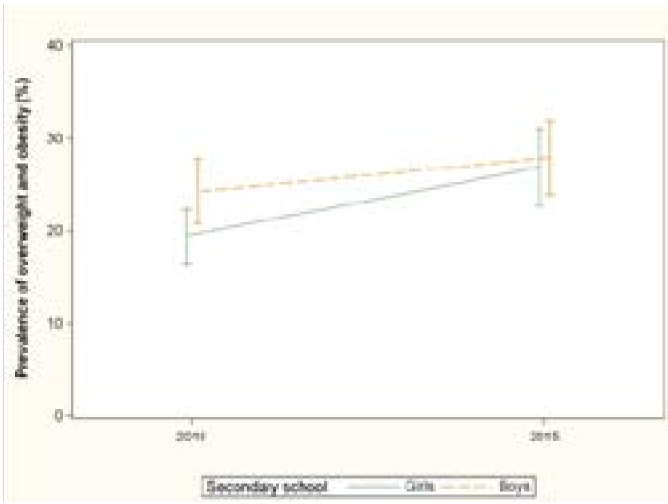


Figure 4.8 Prevalence of combined overweight and obesity among adolescent boys and girls in secondary school in 2010 and 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 27.4% of adolescents in secondary school are overweight or obese. Table 4.7 and Figure 4.9 show the prevalence of combined overweight and obesity among adolescents by sex, year group and socio-demographic characteristics in 2015, and in 2010 for comparison.

Locality

2015: There were no significant differences in prevalence of combined overweight and obesity between adolescents from urban and rural areas.

Change between 2010-2015: The prevalence of combined overweight and obesity significantly increased among adolescents from urban areas, from 21.9% in 2010 to 28.0% in 2015; and among girls from urban areas, from 18.8% in 2010 to 28.4% in 2015.

Socio-economic status

2015: Overall, the prevalence of combined overweight and obesity was significantly higher among adolescents from low SES (32.4%) and middle SES (29.6%) backgrounds, compared with adolescents from high SES (20.1%) backgrounds. The prevalence was significantly higher among girls from low SES (32.3%) and middle SES (30.9%) backgrounds, compared with girls from high SES backgrounds (17.9%); and among boys from low SES (32.4%), compared with boys from high SES (22.4%) backgrounds.

Change between 2010-2015: Overall, the prevalence of combined overweight and obesity significantly increased among adolescents from low SES backgrounds, from 24.1% in 2010 to 32.4% in 2015. The prevalence also significantly increased among girls from low SES backgrounds, from 21.7% in 2010 to 32.3% in 2015; and among girls from middle SES backgrounds, from 20.1% in 2010 to 30.9% in 2015. There was no significant increase in the prevalence of combined overweight and obesity among adolescents from high SES backgrounds.

Cultural background

2015: Overall, the prevalence of combined overweight and obesity was significantly higher among adolescents from Middle Eastern cultural backgrounds (41.1%), compared with adolescents from English-speaking backgrounds (26.1%). The prevalence was significantly higher among boys from Middle Eastern cultural backgrounds (45.2%), compared with boys from English-speaking backgrounds (26.9%).

Change between 2010-2015: Overall, the prevalence of combined overweight and obesity significantly increased among adolescents from Middle Eastern cultural backgrounds, from 23.8% in 2010 to 41.1% in 2015; and among adolescents from Asian cultural backgrounds, from 18.2% in 2010 to 29.3% in 2015. The prevalence significantly increased among girls from English-speaking backgrounds (from 19.8% in 2010 to 25.3% in 2015), from European cultural backgrounds (from 3% in 2010 to 34.9% in 2015; note the large standard error), from Middle Eastern cultural backgrounds (from 14.7% in 2010 to 35.9% in 2015), and from Asian cultural backgrounds (from 14.0% in 2010 to 31.6% in 2015).

Table 4.7 Prevalence of combined overweight and obesity among adolescents in secondary school by sex, year group, socio-demographic characteristics in 2015, and in 2010 for comparison (%, SE)

Characteristic	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Locality				
Urban (ref)	28.3 (2.4)	27.6 (2.6)	28.0 (1.9)	**21.9 (1.5) b**
Rural	26.6 (3.6)	25.5 (3.9)	26.0 (2.8)	22.4 (2.1)
SES				
Low	**34.3 (2.6) a**	30.5 (3.4)	**32.4 (2.3) a**	**24.1 (2.1) b**
Middle	**30.3 (3.4) a**	29.0 (2.8)	**29.6 (2.3) a**	23.7 (2.3)
High (ref)	18.9 (2.4)	21.3 (4.3)	20.1 (2.2)	18.4 (1.3)
Cultural background				
English-speaking (ref)	26.5 (2.1)	25.8 (2.3)	26.1 (1.7)	22.1 (1.4)
European	29.4 (10.3)	26.2 (9.3)	27.8 (7.7)	20.8 (5.5)
Middle Eastern	**48.7 (7.8) a**	32.2 (9.0)	**41.1 (5.0) a**	**23.8 (5.0) b**
Asian	27.6 (5.9)	30.5 (4.6)	29.3 (3.7)	**18.2 (2.1) b**
GIRLS				
Locality				
Urban (ref)	28.9 (3.3)	28.0 (3.9)	28.4 (2.6)	**18.8 (1.7) b**
Rural	22.6 (3.7)	22.3 (5.0)	22.5 (2.9)	21.9 (2.8)
SES				
Low	**35.2 (3.3) a**	29.4 (4.9)	**32.3 (3.1) a**	**21.7 (2.7) b**
Middle	**29.8 (4.0) a**	31.9 (3.5)	**30.9 (2.3) a**	**20.1 (2.7) b**
High (ref)	16.8 (2.9)	19.1 (7.5)	17.9 (3.6)	17.1 (1.6)
Cultural background				
English-speaking (ref)	25.8 (2.9)	24.9 (3.5)	25.3 (2.4)	**19.8 (1.7) b**
European	39.0 (12.5)	27.7 (15.0)	34.9 (10.3)	**3.0 (2.6) b**
Middle Eastern	31.5 (8.5)	42.3 (15.5)	35.9 (7.5)	**14.7 (5.2) b**
Asian	30.9 (4.7)	32.0 (7.1)	31.6 (4.9)	**14.0 (3.2) b**

Characteristic	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	27.7 (2.8)	27.2 (2.9)	27.5 (2.4)	24.7 (2.0)
Rural	30.1 (5.6)	28.1 (3.9)	29.1 (3.6)	22.9 (3.2)
SES				
Low	**33.5 (4.8) a**	31.5 (3.7)	**32.4 (3.5) a**	26.3 (3.1)
Middle	**30.6 (4.3) a**	26.2 (4.1)	28.4 (3.4)	26.9 (3.0)
High (ref)	21.1 (2.9)	23.8 (3.8)	22.4 (2.2)	19.8 (1.8)
Cultural background				
English-speaking (ref)	27.1 (2.8)	26.7 (2.5)	26.9 (1.9)	24.3 (1.9)
European	na	25.3 (12.2)	18.5 (9.5)	32.2 (8.0)
Middle Eastern	**64.9 (11.4) a**	25.6 (9.0)	**45.2 (7.5) a**	36.5 (6.8)
Asian	22.9 (10.4)	28.1 (5.7)	25.9 (5.3)	20.8 (3.2)

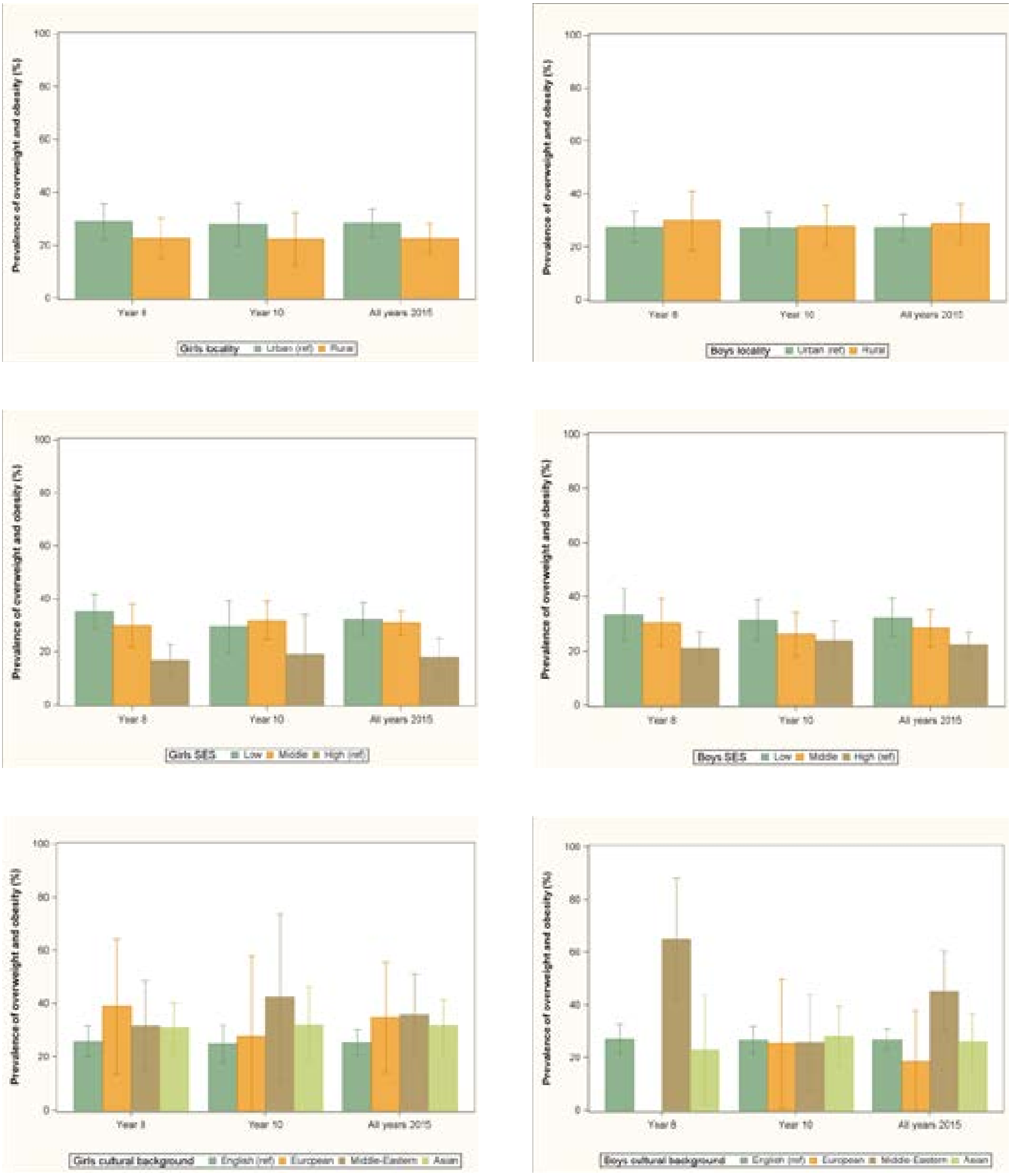
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; and European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background.*

b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 4.9 Prevalence of combined overweight and obesity among adolescents in secondary school by sex, year group, socio-demographic characteristics in 2015 (%, 95%CI)



WAIST-TO-HEIGHT RATIO ≥0.5 (ABDOMINAL OBESITY)

Table 4.8 and Figure 4.10 show the prevalence of waist-to-height ratio ≥0.5 among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison. Figure 4.11 shows the prevalence of waist-to-height ratio ≥0.5 among adolescents in 2010 and 2015 stratified by sex.

Overall, the prevalence of waist-to-height ratio ≥0.5 among adolescents was 13.1%, and the prevalence was significantly lower among girls (9.2%), compared with boys (16.9%). Overall, the prevalence of waist-to-height ratio ≥0.5 significantly increased among adolescents from 9.5% in 2010 to 13.1% in 2015, and among boys from 10.8% in 2010 to 16.9% in 2015.

Table 4.8 Prevalence of waist-to-height ratio ≥0.5 among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

Sex	2015			2010
	Year 8	Year 10	All years	All years
All	13.9 (2.1)	12.2 (1.7)	13.1 (1.6)	**9.5 (1.1) b**
Girls	**8.4 (1.9) a**	9.9 (2.4)	**9.2 (1.6) a**	8.2 (1.3)
Boys	19.3 (2.7)	14.5 (2.2)	16.9 (2.0)	**10.8 (1.4) b**

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all year groups.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 4.10 Prevalence of waist-to-height ratio ≥0.5 among adolescents in secondary school by sex and year group, in 2010 (%, 95%CI)

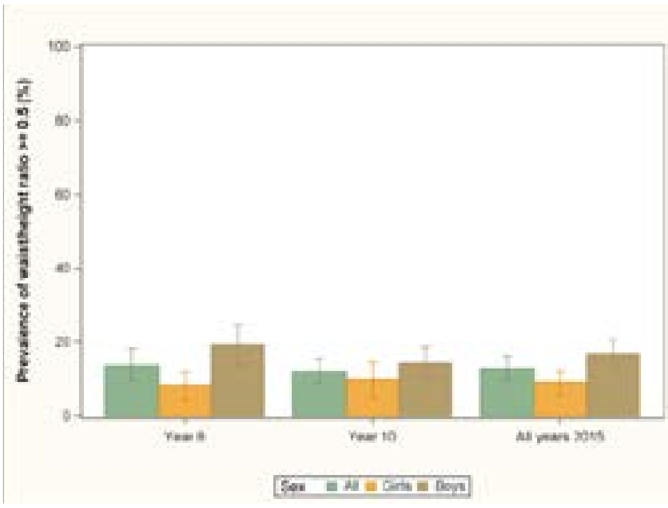
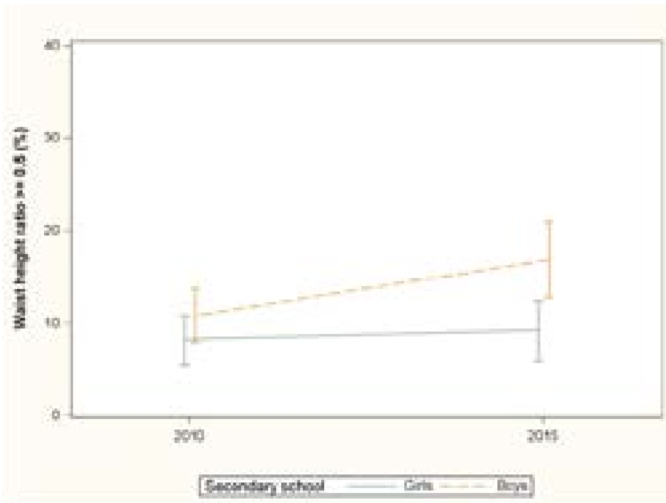


Figure 4.11 Prevalence of waist-to-height ratio ≥0.5 among adolescent boys and girls in secondary school in 2010 and 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 13.1% of adolescents in secondary school have a waist-to-height ratio greater than 0.5, which represents an increased risk of cardio-metabolic complications. Table 4.9 and Figure 4.12 show the prevalence of waist-to-height ratio ≥0.5 by sex, year group and socio-demographic characteristics in 2015, and in 2010 for comparison.

Locality

2015: There were no significant differences in the prevalence of waist-to-height ratio ≥0.5 between adolescents from urban and from rural areas.

Change between 2010-2015: Overall, the prevalence of a waist-to-height ratio ≥0.5 significantly increased among boys from rural areas, from 10.5% in 2010 to 18.1% in 2015.

Socio-economic status

2015: Overall, the prevalence of waist-to-height ratio ≥0.5 was significantly higher among adolescents from low SES (16.5%) and from middle SES (15.4%) backgrounds, compared with adolescents from high SES (7.3%) backgrounds. The prevalence was significantly higher among boys from low SES (21.6%) and middle SES (19.0%) backgrounds, compared with boys from high SES backgrounds (9.5%).

Change between 2010-2015: Overall, the prevalence of a waist-to-height ratio ≥0.5 significantly increased among boys from low SES backgrounds from 10.6% in 2010 to 21.6% in 2015.

Cultural background

2015: The prevalence of waist-to-height ratio ≥0.5 was significantly higher among adolescents from Middle Eastern cultural backgrounds (26.6%), compared with adolescents from English-speaking backgrounds (12.5%). The prevalence was significantly higher among boys from Middle Eastern cultural backgrounds (41.2%), compared with boys from English-speaking backgrounds (15.8%).

Change between 2010-2015: The prevalence of waist-to-height ratio ≥0.5 significantly increased among adolescents from Middle Eastern cultural backgrounds, from 9.7% in 2010 to 26.6% in 2015; and from Asian cultural backgrounds, from 4.7% in 2010 to 11.9% in 2015. The prevalence of waist-to-height ratio ≥0.5 significantly increased among boys from English-speaking (from 10.8% in 2010 to 15.8% in 2015), from Middle Eastern cultural backgrounds (from 20.4% in 2010 to 41.2% in 2015) and from Asian cultural backgrounds (from 6.0% in 2010 to 17.4% in 2015).

Table 4.9 Prevalence of waist-to-height ratio ≥0.5 among adolescents in secondary school by sex, year group, socio-demographic characteristics in 2015, and in 2010 for comparison (%, SE)

Characteristic	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Locality				
Urban (ref)	14.3 (2.8)	11.9 (2.1)	13.1 (2.1)	9.0 (1.2)
Rural	13.1 (2.3)	12.8 (3.1)	13.0 (1.9)	11.5 (2.3)
SES				
Low	**18.7 (3.5) a**	14.3 (3.0)	**16.5 (2.8) a**	11.7 (1.8)
Middle	**16.8 (3.7) a**	13.9 (2.5)	**15.4 (2.2) a**	11.6 (1.9)
High (ref)	6.5 (1.4)	8.1 (2.3)	7.3 (1.5)	5.6 (1.2)
Cultural background				
English-speaking (ref)	13.2 (1.9)	11.8 (1.7)	12.5 (1.4)	9.7 (1.2)
European	na	na	na	14.5 (5.5)
Middle Eastern	**35.7 (12.6) a**	15.9 (6.7)	**26.6 (8.3) a**	**9.7 (3.2) b**
Asian	9.2 (4.6)	13.8 (4.7)	11.9 (3.9)	**4.7 (1.4) b**
GIRLS				
Locality				
Urban (ref)	9.3 (2.5)	10.4 (2.9)	9.9 (2.0)	6.9 (1.4)
Rural	5.6 (1.8)	8.5 (3.8)	7.0 (2.0)	12.6 (2.8)
SES				
Low	**12.6 (2.8) a**	9.8 (4.0)	11.2 (2.8)	12.8 (2.6)
Middle	**9.3 (3.9) a**	13.2 (4.2)	11.3 (2.6)	8.6 (2.0)
High (ref)	3.1 (1.1)	7.1 (4.0)	5.1 (2.3)	4.1 (1.3)
Cultural background				
English-speaking (ref)	8.4 (2.0)	9.6 (2.3)	9.0 (1.6)	8.5 (1.5)
European	na	na	na	na
Middle Eastern	8.7 (6.8)	7.6 (7.6)	8.3 (7.0)	2.0 (1.6)
Asian	2.6 (2.0)	11.9 (6.3)	8.2 (4.5)	2.6 (2.0)

Characteristic	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	19.2 (3.3)	13.6 (2.7)	16.4 (2.7)	10.9 (1.8)
Rural	19.8 (4.5)	16.5 (3.9)	18.1 (2.8)	10.5 (2.2) b
SES				
Low	**25.1 (4.8) a**	**18.5 (3.9) a**	**21.6 (3.6) a**	10.6 (2.0) b
Middle	**23.3 (4.6) a**	14.6 (2.9)	**19.0 (3.0) a**	14.2 (2.8)
High (ref)	9.8 (1.9)	9.2 (2.5)	9.5 (1.7)	7.2 (1.5)
Cultural background				
English-speaking (ref)	17.5 (2.4)	14.0 (2.2)	15.8 (1.7)	10.8 (1.6) b
European	na	na	na	23.7 (7.5)
Middle Eastern	**61.3 (13.5) a**	21.3 (8.5)	**41.2 (8.1) a**	20.4 (5.3) b
Asian	18.3 (9.7)	16.7 (6.6)	17.4 (6.5)	6.0 (1.9) b

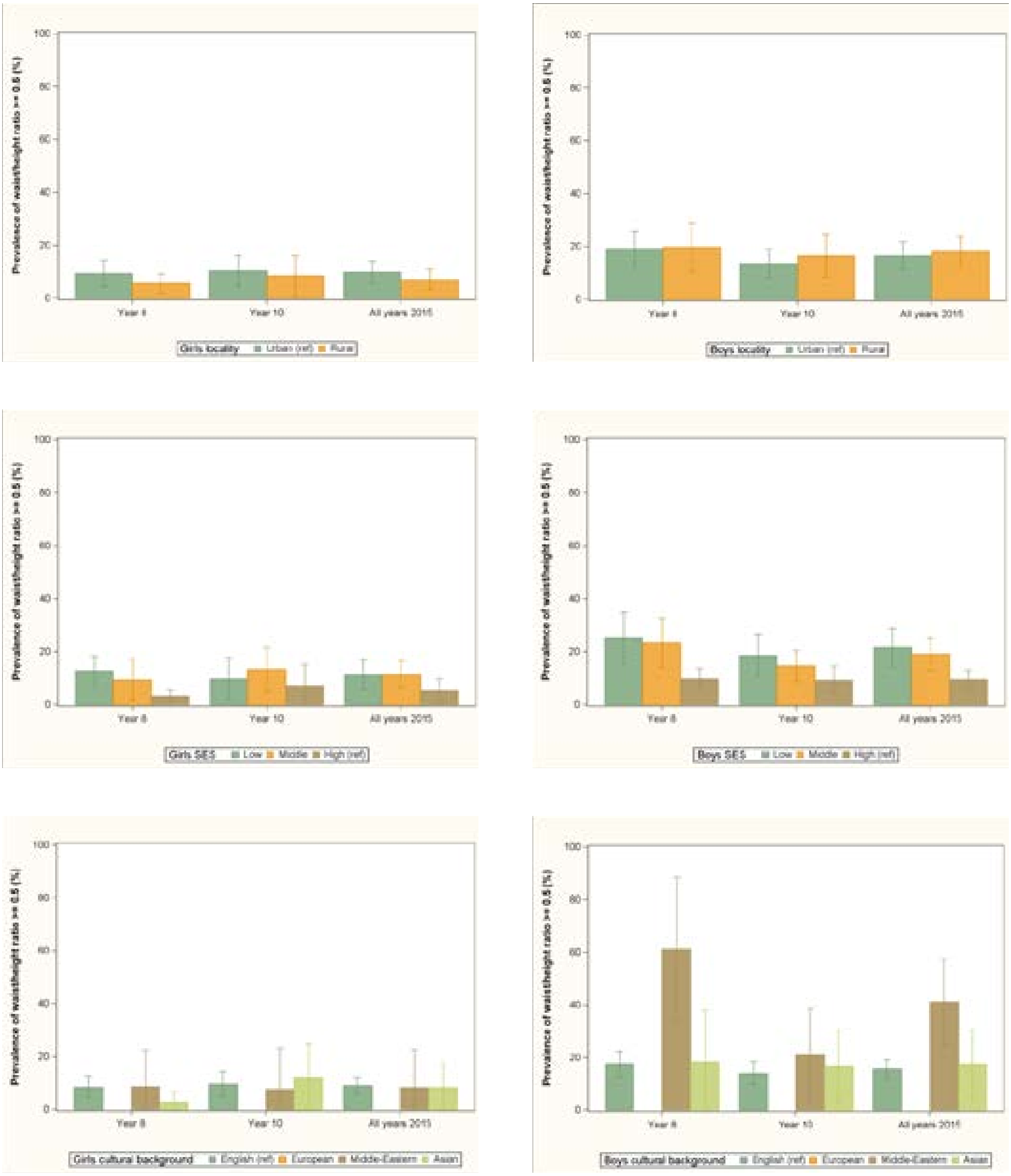
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; and European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background.*

b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 4.12 Prevalence of waist-to-height ratio ≥0.5 among adolescents in secondary school by sex, year group and socio-demographic characteristics in 2015 (%, 95%CI)



SUMMARY OF THE WEIGHT STATUS OF ADOLESCENTS IN SECONDARY SCHOOL

The table below summarises the findings on the weight status of adolescents in secondary school.

Weight indicator	Government policies	SPANS cut point	Prevalence (%)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
Combined overweight/ obesity	Reduce overweight and obesity rates of children and young people (age 5-16 years) to 21% by 2015	International Obesity Taskforce definitions[5]	22.0%	27.4% sig	**2015:** Overall, the proportion of adolescents who were overweight-obese was significantly higher among adolescents from low and middle SES backgrounds and from Middle Eastern cultural backgrounds **Change 2010-15:** Overall, there were no significant changes in combined overweight-obesity between 2010 and 2015. Within subgroups, combined overweight-obesity significantly increased among adolescents from urban areas; from low SES backgrounds; and from Middle Eastern and Asian cultural backgrounds
Overweight			16.9%	21.7% sig	
Obese			5.1%	5.8%	
Abdominal obesity (WtHr≥0.5)	There are no specific guidelines	Waist-to-height ratio ≥0.5[6]	9.5%	13.1% sig	**2015:** Overall, the proportion of adolescents with WtHr≥0.5 was significantly higher among boys, and among adolescents from low and from middle SES, and Middle Eastern cultural backgrounds **Change 2010-15:** Overall the proportion of adolescents with WtHr≥0.5 significantly increased between 2010 and 2015. Within subgroups, WtHr≥0.5 significantly increased only among adolescents from Middle Eastern and Asian cultural backgrounds.

sig= *Indicates statistically significant difference at P < 0.05.*

** Comparisons are between rural compared with urban; low and middle SES compared with high SES; and European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background.*

CHILDREN & ADOLESCENTS AGE 5-16 YEARS

The following section combines the findings for children and adolescents from all year groups (i.e., Years K, 2, 4, 6, 8 and 10). Combining results from primary and secondary school students attenuated the significant increase in combined overweight and obesity observed among adolescents in secondary school. This may in part be explained by the larger sample size in primary school (four year groups) compared with secondary school (two year groups).

BODY MASS INDEX (BMI)

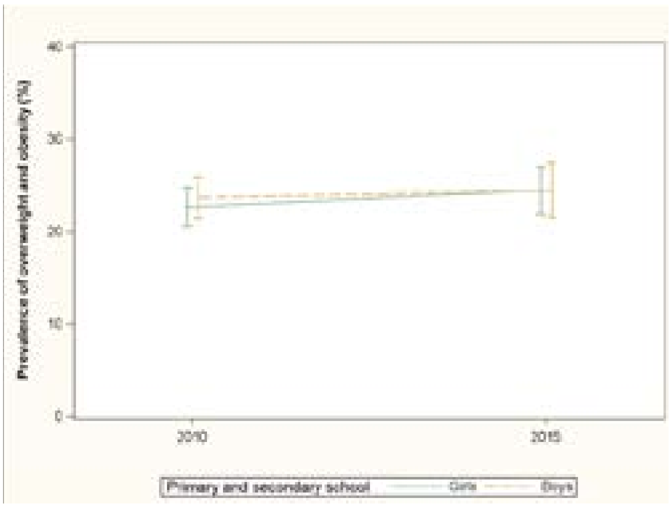
Table 4.10 and Figure 4.13 show the prevalence of combined overweight and obesity among children and adolescents age 5-16 years in 2010 and 2015 stratified by sex. There were no significant changes in the prevalence of thinness, healthy weight, overweight, obesity, or combined overweight and obesity between 2010 and 2015.

Table 4.10 Prevalence of combined overweight and obesity among children and adolescents age 5-16 years in 2010 and 2015 (% SE)

Characteristic	2015	2010
ALL		
Thin	6.5 (0.3)	7.0 (0.4)
Healthy weight	69.0 (1.1)	69.8 (0.9)
Overweight	17.9 (0.7)	17.1 (0.6)
Obese	6.6 (0.7)	6.1 (0.5)
Overweight + obese	24.5 (1.2)	23.2 (0.9)
GIRLS		
Thin	6.9 (0.4)	8.0 (0.6)
Healthy weight	68.6 (1.2)	69.3 (1.0)
Overweight	17.8 (0.9)	16.9 (0.7)
Obese	6.7 (0.7)	5.8 (0.6)
Overweight + obese	24.5 (1.3)	22.7 (1.1)
BOYS		
Thin	6.2 (0.4)	6.1 (0.4)
Healthy weight	69.3 (1.4)	70.2 (1.1)
Overweight	18.0 (1.0)	17.3 (0.8)
Obese	6.5 (0.8)	6.4 (0.6)
Overweight + obese	24.5 (1.5)	23.7 (1.1)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 4.13 Prevalence of combined overweight and obesity among children and adolescents age 5-16 years in 2010 and 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 24.5% of NSW children and adolescents age 5-16 years were in the combined overweight and obese BMI category. Table 4.11 and Figure 4.12 show the prevalence of combined overweight and obesity by sex, year group and cultural background in 2015, and in 2010 for comparison.

Locality

2015: There were no significant differences in prevalence of combined overweight and obesity between children and adolescents from urban and rural areas.

Change between 2010-2015: There were no significant changes in prevalence of combined overweight and obesity among children and adolescents from urban or rural areas between 2010 and 2015.

Socio-economic status

2015: Overall, the prevalence of combined overweight and obesity was significantly higher among children and adolescents from low SES (33.7%) and middle SES (23.4%) backgrounds, compared with children and adolescents from high SES (19.3%) backgrounds. The prevalence was higher among girls from low SES (32.9%) and middle SES (24.9%) backgrounds, compared with girls from high SES (18.7%) backgrounds; and among boys from low SES (34.4%), compared with boys from high SES (19.8%) backgrounds.

Change between 2010-2015: The prevalence of combined overweight and obesity significantly increased among children and adolescents from low SES backgrounds, from 27.3% in 2010 to 33.7% in 2015; and among girls from low SES backgrounds, from 25.6% in 2010 to 32.9% in 2015.

Cultural background

2015: The prevalence of combined overweight and obesity was significantly higher among children and adolescents from Middle Eastern cultural backgrounds (42.3%), compared with children and adolescents from English-speaking backgrounds (23.3%). The prevalence was significantly higher among girls from Middle Eastern cultural backgrounds (35.8%), compared with girls from English-speaking backgrounds (23.8%); and among boys from Middle Eastern cultural backgrounds (48.4%), compared with boys from English-speaking backgrounds (22.8%).

Change between 2010-2015: Overall, there were no significant changes in the prevalence of combined overweight and obesity among children and adolescents from different cultural backgrounds between 2010 and 2015.

Table 4.11 Prevalence of combined overweight-obesity among children and adolescents age 5-16 years by sex, year group, socio-demographic characteristics in 2015, and in 2010 for comparison (%, SE)

Characteristic	2015	2010
ALL		
Locality		
Urban (ref)	24.9 (1.5)	23.8 (1.0)
Rural	23.2 (1.6)	20.0 (1.4)
SES		
Low	**33.7 (2.4) a**	**27.3 (1.6) b**
Middle	**23.4 (1.2) a**	22.5 (1.3)
High (ref)	19.3 (1.5)	20.3 (1.2)
Cultural background		
English-speaking (ref)	23.3 (1.1)	22.2 (0.9)
European	26.8 (4.9)	26.6 (4.7)
Middle Eastern	**42.3 (3.7) a**	34.8 (3.7)
Asian	24.8 (2.1)	24.4 (1.8)
GIRLS		
Locality		
Urban (ref)	24.5 (1.5)	23.3 (1.1)
Rural	24.3 (2.3)	19.5 (2.2)
SES		
Low	**32.9 (2.5) a**	**25.6 (1.6) b**
Middle	**24.9 (1.7) a**	22.2 (1.6)
High (ref)	18.7 (1.7)	20.5 (1.8)
Cultural background		
English-speaking (ref)	23.8 (1.4)	22.4 (1.1)
European	30.0 (6.3)	17.5 (5.3)
Middle Eastern	**35.8 (3.5) a**	29.9 (5.2)
Asian	23.3 (3.0)	19.7 (1.8)

Characteristic	2015	2010
BOYS		
Locality		
Urban (ref)	25.3 (1.9)	24.3 (1.3)
Rural	22.2 (1.9)	20.5 (1.9)
SES		
Low	**34.4 (3.4) a**	28.9 (2.2)
Middle	22.0 (1.6)	22.7 (1.5)
High (ref)	19.8 (1.8)	20.0 (1.3)
Cultural background		
English-speaking (ref)	22.8 (1.2)	22.0 (1.0)
European	22.8 (6.7)	35.1 (6.9)
Middle Eastern	**48.4 (7.6) a**	39.4 (4.6)
Asian	26.9 (3.5)	28.3 (3.0)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; and European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children and adolescents for each socio-demographic characteristic.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

ABDOMINAL OBESITY; WAIST-TO-HEIGHT RATIO ≥0.5

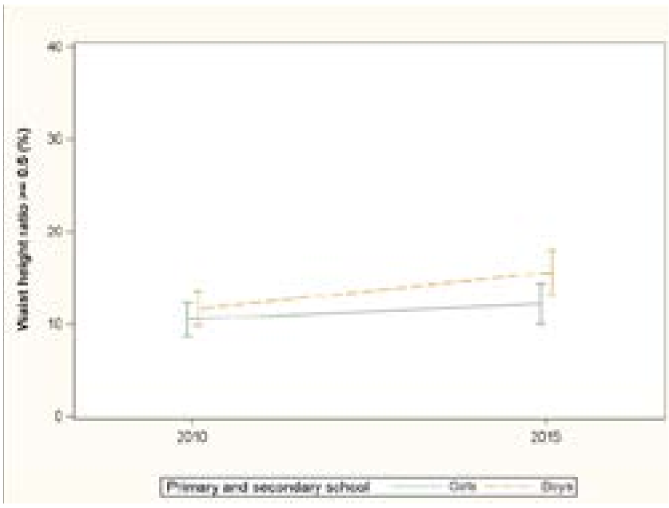
Table 4.12 and Figure 4.14 show the prevalence of waist-to-height ratio ≥ 0.5 among children and adolescents age 5-16 years in 2010 and 2015 stratified by sex. The prevalence of waist-to-height ratio ≥0.5 significantly increased by 2.8% among children age 5-16 years between 2010 (11.1%) and 2015 (13.9%). In 2010, there was no sex difference in the prevalence of waist-to-height ratio ≥0.5, but in 2015, the prevalence was significantly higher among boys (15.6%) compared with girls (12.2%).

Table 4.12 Prevalence of waist-to-height ratio ≥0.5 among children and adolescents age 5-16 years in 2010 and 2015 (% SE)

Sex	2015	2010
All	13.9 (1.0)	**11.1 (0.8) b**
Girls	**12.2 (1.1) a**	10.5 (0.9)
Boys	15.6 (1.2)	**11.7 (0.9) b**

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 4.14 Prevalence of waist-to-height ratio ≥0.5 among children and adolescents age 5-16 years in 2010 and 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 13.9% of children and adolescents age 5-16 years have a waist-to-height ratio greater than 0.5, which represents an increased risk of cardio-metabolic complications. Table 4.13 shows the prevalence among children age 5-16 years of waist-to-height ratio ≥0.5 by locality, SES and cultural background, stratified by sex and year group, in 2015, and in 2010 for comparison.

Locality

2015: There were no significant differences in the prevalence of waist-to-height ratio ≥0.5 between urban and rural children and adolescents age 5-16 years.

Change between 2010-2015: The prevalence of a waist-to-height ratio ≥0.5 has significantly increased among children and adolescents age 5-16 years from 11.3% in 2010 to 14.3% in 2015. The prevalence of a waist-to-height ratio ≥0.5 has significantly increased among boys age 5 to 16 years in urban areas from 11.9% in 2010 to 16.1% in 2015.

Socio-economic status

2015: Overall, the prevalence of waist-to-height ratio ≥0.5 was significantly higher among children and adolescents age 5-16 years from low SES (19.9%) and middle SES (13.4%) backgrounds, compared with children from high SES backgrounds (10.2%). The prevalence was significantly higher among low SES boys (23.1%), compared with high SES boys (11.5%); and among girls from low SES (16.7%), compared with girls from high (9.0%) SES backgrounds.

Change between 2010-2015: The prevalence of a waist-to-height ratio ≥0.5 significantly increased among children and adolescents from low SES backgrounds, from 14.1% in 2010 to 19.9% in 2015.

Cultural background

2015: The prevalence of waist-to-height ratio ≥0.5 was significantly higher among children age 5-16 years from Middle Eastern cultural backgrounds (30.3%) compared with their English-speaking peers (13.2%). The prevalence was significantly higher among Middle Eastern boys (38.7%), compared with English-speaking boys (14.2%); and among girls from Middle Eastern (21.3%) cultural backgrounds, compared with girls from English-speaking (12.2%) cultural backgrounds. The prevalence of waist-to-height ratio ≥0.5 was significantly lower among girls from European (4.2%) cultural backgrounds, compared with girls from English-speaking (12.2%) backgrounds.

Change between 2010-2015: The prevalence of waist-to-height ratio ≥0.5 significantly increased among children age 5-16 years from English-speaking backgrounds, from 10.2% in 2010 to 13.2% in 2015; and among children age 5-16 years from Middle Eastern cultural backgrounds, from 21.3% to 30.3% in 2015. The prevalence significantly increased among boys from English-speaking backgrounds, from 10.4% in 2010 to 14.2% in 2015; and among boys from Middle Eastern cultural backgrounds, from 25.4% to 38.7% in 2015.

Table 4.13 Prevalence of waist-to-height ratio ≥0.5 among children and adolescents age 5-16 years by sex, year group, socio-demographic characteristics in 2015, and in 2010 for comparison (%, SE)

Characteristic	2015	2010
ALL		
Locality		
Urban (ref)	14.3 (1.3)	**11.3 (0.9) b**
Rural	12.4 (1.1)	10.4 (1.6)
SES		
Low	**19.9 (2.1) a**	**14.1 (1.5) b**
Middle	**13.4 (1.3) a**	11.3 (1.2)
High (ref)	10.2 (1.1)	8.0 (1.0)
Cultural background		
English-speaking (ref)	13.2 (0.9)	**10.2 (0.7) b**
European	8.5 (2.7)	15.1 (3.7)
Middle Eastern	**30.3 (2.9) a**	**21.3 (3.2) b**
Asian	12.1 (2.1)	12.8 (2.0)
GIRLS		
Locality		
Urban (ref)	12.6 (1.4)	10.6 (1.0)
Rural	10.7 (1.7)	10.2 (2.1)
SES		
Low	**16.7 (2.2) a**	14.1 (1.7)
Middle	12.5 (1.7)	10.7 (1.2)
High (ref)	9.0 (1.3)	6.8 (1.2)
Cultural background		
English-speaking (ref)	12.2 (1.1)	9.9 (0.9)
European	**4.2 (2.4) a**	6.4 (3.2)
Middle Eastern	**21.3 (3.6) a**	17.0 (4.2)
Asian	7.8 (2.5)	11.4 (2.8)

Characteristic	2015	2010
BOYS		
Locality		
Urban (ref)	16.1 (1.6)	**11.9 (1.1) b**
Rural	14.0 (1.4)	10.6 (1.4)
SES		
Low	**23.1 (2.5) a**	**14.2 (1.8) b**
Middle	14.3 (1.6)	11.9 (1.4)
High (ref)	11.5 (1.3)	9.1 (1.1)
Cultural background		
English-speaking (ref)	14.2 (1.0)	**10.4 (0.9) b**
European	13.7 (5.4)	23.3 (6.2)
Middle Eastern	**38.7 (4.8) a**	**25.4 (3.4) b**
Asian	18.5 (3.5)	14.0 (2.1)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children and adolescents for each socio-demographic characteristic.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

SUMMARY

Overall, the prevalence of overweight, obesity, and combined overweight and obesity among children and adolescents age 5-16 years was 17.9%, 6.6% and 24.5% respectively. There was clear and consistent evidence that the prevalence of combined overweight and obesity was significantly higher among children and adolescents from low SES backgrounds, compared with children and adolescents from high SES backgrounds; and in children from Middle Eastern cultural backgrounds, compared with children and adolescents from English-speaking backgrounds.

Between 2010 and 2015, the prevalence of combined overweight and obesity did not significantly increase among children in primary school, but did increase significantly among adolescents in secondary school, from 22.0% in 2010 to 27.4% in 2015. The increase among adolescents in secondary school was driven by the significant increase in prevalence of overweight, from 16.9% in 2010 to 21.7% in 2015.

The prevalence of waist-to-height ratio ≥0.5 in children and adolescents age 5-16 years was 13.9% in 2015. The prevalence was significantly higher among girls, compared with boys; among children and adolescents from low SES backgrounds, compared with children and adolescents from high SES backgrounds; and among children and adolescents from Middle Eastern cultural backgrounds, compared with children and adolescents from English-speaking backgrounds.

Between 2010 and 2015, the prevalence of waist-to-height ratio ≥0.5 did not significantly increase among children in primary school, but did increase significantly among adolescents in secondary school, from 9.5% in 2010 to 13.1% in 2015.

The different rates of change in the prevalence of combined overweight and obesity between primary and secondary school students may reflect the level of investment by government and non-government agencies in school-based healthy eating and physical activity programs. While there has been a focused effort to address healthy eating and physical activity in the early childhood sector and primary schools, there have been few programs implemented in secondary schools.

The findings are promising for primary school age children and suggest the state-wide investments over the last decade may be positively influencing children's weight status and preventing weight gain. The findings for adolescents in secondary school indicate the need to find better strategies to engage adolescents, particularly adolescents from low socio-economic groups and non-English-speaking backgrounds, to reduce the increased rates of overweight and obesity and abdominal obesity.

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CHAPTER 5: FOOD CONSUMPTION

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5-16 YEARS

79%
of children and adolescents met the recommended daily intake of fruit

7%
of children and adolescents met the recommended daily intake of vegetables

10%
of children and adolescents ate fried potato products three or more times/week

2015

- **79% of children and adolescents met the recommended daily intake of fruit (i.e., 2 serves/day)**
  - Children and adolescents from rural areas were more likely to meet the daily fruit recommendation (83%), compared with children and adolescents from urban areas (77%)
  - Children and adolescents from Asian cultural backgrounds were less likely to meet the daily fruit recommendation (68%), compared with children and adolescents from English-speaking backgrounds (80%)
  - Children and adolescents in the thin BMI category were less likely to meet the daily fruit recommendation (73%), compared with children and adolescents in the healthy BMI category (79%)
- **7% of children and adolescents met the recommended daily intake of vegetables (i.e., 5 serves/day)**
  - Children and adolescents from rural areas were more likely to meet the daily vegetable recommendation (9%), compared with children and adolescents from urban areas (6%)
  - Children and adolescents from low SES backgrounds were more likely to meet the daily vegetable recommendation (9%), compared with children and adolescents from high SES backgrounds (6%)
  - Children and adolescents in the thin BMI category were less likely to meet the daily vegetable recommendation (73%), compared with children and adolescents in the healthy weight BMI category (79%)
- **10% of children and adolescents ate fried potato products three or more times/week**
- **32% of children and adolescents ate potato chips three or more times/week**
- **48% of children and adolescents ate processed snack food products three or more times/week**
- **27% of children and adolescents ate confectionery three or more times/week**
- **31% of children and adolescents ate ice cream or ice blocks three or more times/week**
- **59% of children and adolescents drank whole milk; 27% drank low/reduced-fat milk**
- **16% of children and adolescents drank one or more cups of fruit juice daily**

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5-16 YEARS

9%
of children and adolescents drank one or more cups of soft drink daily

2%
of children and adolescents drank one or more cups of sports drinks daily

- **9% of children and adolescents drank one or more cups of soft drink daily**
  - Children and adolescents from low (11%) and middle SES (7%) were more likely to drink one or more cups of soft drink daily, compared with children and adolescents from high SES (4%) backgrounds
  - Children and adolescents from Middle Eastern cultural backgrounds (12%) were more likely to drink one or more cups of soft drink daily, compared with children and adolescents from English-speaking backgrounds (9%)
  - Children and adolescents in the obese BMI category (12%) were more likely to drink one or more cups of soft drink daily, compared with children and adolescents in the healthy BMI category (5%)
- **2% of children and adolescents drank one or more cups of sports drinks daily**
- **11% of children and adolescents drank energy drinks at least once/week**

SIGNIFICANT CHANGES BETWEEN 2010-2015

- **The proportion of children and adolescents meeting the daily fruit recommendation increased from 73% in 2010 to 79% in 2015. Changes by socio-demographic characteristics were observed among children and adolescents from:**
  - Urban areas, from 74% in 2010 to 77% in 2015; and rural areas from, 68% in 2010 to 83% in 2015
  - Low SES backgrounds, from 68% in 2010 to 78% in 2015; and middle SES backgrounds, from 74% in 2010 to 78% in 2015
  - English-speaking backgrounds, from 73% in 2010 to 80% in 2015
  - Thin BMI category, from 67% in 2010 to 73% in 2015; healthy weight BMI category, from 74% in 2010 to 79% in 2015; overweight BMI category, from 72% in 2010 to 80% in 2015; and obese BMI category, from 68% in 2010 to 77% in 2015
- **The proportion of children and adolescents meeting the daily vegetable recommendation increased from 5% in 2010 to 7% in 2015. Increases were observed among children and adolescents from:**
  - Urban areas, from 5% in 2010 to 6% in 2015
  - Low SES backgrounds (5% in 2010 to 9% in 2015) and middle SES backgrounds (5% in 2010 to 7% in 2015)
  - English-speaking backgrounds (5% in 2010 to 7% in 2015) and Asian cultural backgrounds (4% in 2010 to 7% in 2015)
  - Thin BMI category, from 3% in 2010 to 7% in 2015; healthy weight BMI category, from 5% in 2010 to 7% in 2015; and overweight BMI category, from 4% in 2010 to 8% in 2015

CONTEXT

Promoting healthy eating among children and adolescents and ensuring that the most appropriate types and amounts of food are consumed during this dynamic stage of the lifecycle is vital to preventing health problems including obesity and dental decay. Additionally, healthy eating in childhood and adolescence promotes optimal growth and development, helps prevent the risk of developing diet-related diseases later in life, and is an effective investment for future health.[1]

The accurate measurement of children's and adolescents' diet is difficult and complex.[2] For this reason, short questions are often used in surveillance systems to examine the consumption of 'indicator foods', or foods associated with health status.[3] Foods such as fruit and vegetables contribute to a healthy diet and provide a ready source of vitamins, minerals and fibre. Some other foods are not essential in the diet, such as foods and beverages that are energy-dense and nutrient-poor; and often high in fat, salt and sugar.[4] These foods are sometimes called 'discretionary choices' or foods that should be eaten only on special occasions, and current Australian Dietary Guidelines recommend limiting the amount as well as the frequency of consumption of these foods.[4]

For SPANS 2015, information about children's and adolescents' dietary intake was collected using a short food frequency questionnaire developed for population-based monitoring surveys.[5] Briefly, the questions perform reasonably well in ranking individuals according to their intakes, and indicate differences in diet quality between response categories. The short dietary questions used in SPANS provide information on the proportions of children and adolescents who consume higher and lower amounts of certain foods and drinks; but they do not provide a precise estimate of intake and, therefore, estimates of the proportion of children meeting dietary recommendations must be interpreted with caution. Short questions can also provide an indication of changes in food consumption over time and thereby establish trends, provided the questions are consistent across survey years.[5]

The indicator foods for the survey include fruit, vegetables, red meat, processed meat, hot chips, sweet and salty snack foods, confectionery, ice cream, fruit juice, water, sugar-sweetened beverages (i.e., soft drinks, cordials, flavoured water, diet soft drinks, sport drinks) and milk (including flavoured milk). Over the past five to 10 years, caffeinated energy drinks and sports drinks targeted at the youth market have become prevalent, and caffeine toxicity from energy drink consumption has been reported as increasing, particularly among adolescents.[6] Questions in relation to the consumption of energy drinks and sports drinks were therefore included in SPANS 2015.

This chapter reports on indicators of foods consumed among children (i.e., Years K, 2, 4 and 6) and adolescents (i.e., Years 8 and 10), sampled by year group, sex, and, where appropriate, by socio-demographic characteristics and BMI category. Where available, the 2010 prevalence estimates of indicators of dietary intake are included for comparison. The findings are presented separately for children in primary school and adolescents in secondary school. The prevalence estimates (%) need to be interpreted along with their standard errors (SE); a proportionally large standard error means a less precise estimate.

PRIMARY SCHOOL

A methodological factor to consider in the interpretation of the findings on children in primary school is the difference in respondent. Parents reported on behalf of their child in Years K, 2 and 4, while children in Year 6 self-reported, which may reflect some of the notable differences in the reported prevalence of indicators of foods consumed between younger primary years and Year 6. The combined prevalence in primary school will reflect these differences in data collection methods.

FRUIT CONSUMPTION

Fruit is an excellent source of vitamins, including folate, and phytochemicals and provides natural sugars and dietary fibre. There is accumulating evidence to suggest that consumption of fruit protects against chronic diseases such as cardiovascular disease and some cancers.[7] The current Australian Dietary Guidelines (ADG) recommend that children age 4-8 years (corresponding to Years K-4) consume at least one and a half serves of fruit per day, and children and adolescents age 9-11 years (corresponding to Year 6) consume at least two serves per day.[4]

The current ADG[4] were released in 2013, i.e., between the last two survey periods for SPANS, and included revised recommendations for daily serves of fruit. In 2010, the ADG recommended that children age 4-11 years (Years K, 2 and 4 in SPANS) consume at least one serve of fruit a day and adolescents age 12-18 years (Year 6, 8 and 10 in SPANS) consume at least three serves of fruit per day.[8] The new fruit recommendation has been applied to the SPANS 2010 data presented here to assess change between survey periods.

The SPANS question did not include half serve responses, hence for reporting purposes all children surveyed were considered to meet the ADG if they consumed at least two serves of fruit per day. This is in line with current education strategies aimed at parents of primary school-age children.[9] It is important to note that in the younger year groups (Years K-4) the proportion of children meeting the guidelines may be an underestimate if parents actually provided one and a half serves of fruit daily, but reported this as one, rather than two, serves per day in the survey. Further, validation studies for the fruit question indicate good agreement with more detailed measures of dietary intake, but that intakes are underestimated at the lower end of consumption, suggesting children who report low intakes, or children whose parents report low intakes, may in reality be consuming higher amounts.[10, 11]

The current ADGs suggest that fruit juice with ‘no added sugar’ may be included among fruit serves ‘only occasionally’, with half a cup (125 ml) of fruit juice equivalent to one serve of fruit.[4] Because it is difficult for children and their parents to know if the fruit juice they consume has no added sugar, fruit juice was not included in the serves of fruit reported.

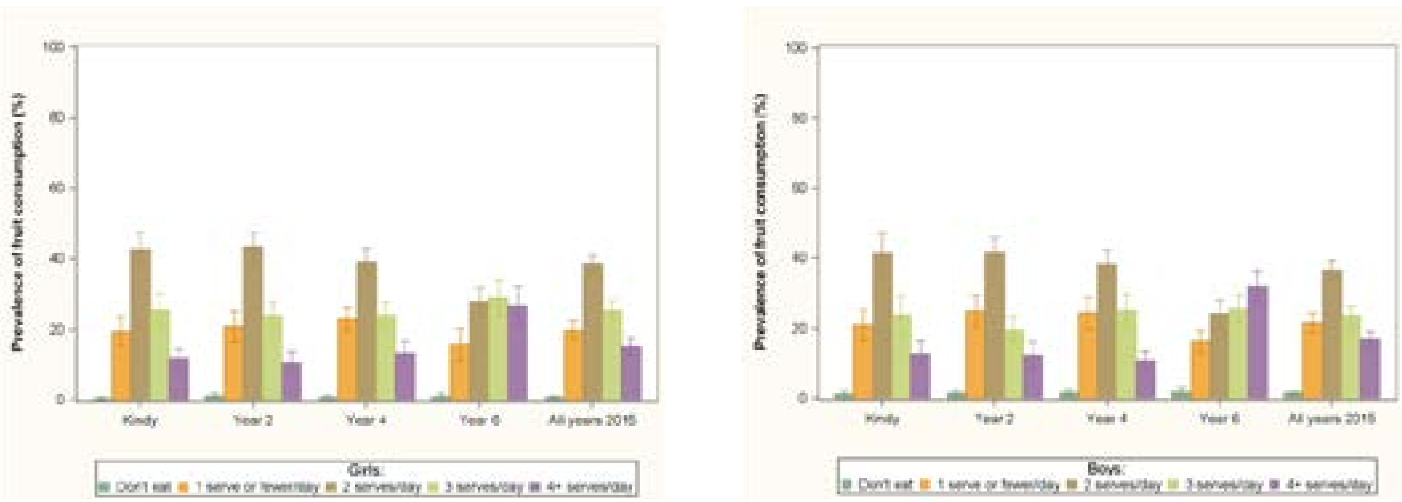
Table 5.1 and Figure 5.1 show the usual daily consumption of fruit among primary school children stratified by sex and year group in 2015, and in 2010 for comparison. Overall, 78% of children consumed at least two serves of fruit daily (the recommended intake) and a small proportion (1%) reported consuming no fruit.

Table 5.1 Usual daily consumption of fruit among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

Fruit serves	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Don't eat fruit	0.8 (0.3)	1.3 (0.3)	1.1 (0.3)	1.6 (0.4)	1.2 (0.2)	1.2 (0.2)
1 serve or less per day	20.2 (1.4)	22.8 (1.7)	23.6 (1.5)	16.0 (1.5)	20.7 (1.0)	26.7 (1.3)
2 serves per day	42.0 (1.7)	42.5 (1.5)	38.6 (1.4)	25.9 (1.3)	37.6 (0.9)	38.6 (0.7)
3 serves per day	24.7 (1.9)	21.9 (1.3)	24.5 (1.6)	27.2 (1.6)	24.5 (1.0)	20.5 (1.0)
4 or more serves per day	12.3 (1.0)	11.4 (1.3)	12.1 (1.0)	29.3 (1.8)	16.0 (0.8)	13.0 (0.8)
GIRLS						
Don't eat fruit	0.4 (0.2)	1.2 (0.5)	0.7 (0.3)	1.1 (0.5)	0.8 (0.2)	1.0 (0.2)
1 serve or less per day	19.5 (2.0)	21.0 (2.2)	22.9 (1.7)	15.7 (2.3)	19.8 (1.2)	24.4 (1.5)
2 serves per day	42.7 (2.4)	43.4 (2.1)	39.1 (1.9)	27.8 (2.0)	38.6 (1.2)	40.7 (1.1)
3 serves per day	25.6 (2.3)	23.9 (2.0)	24.1 (1.8)	28.8 (2.6)	25.5 (1.3)	22.1 (1.4)
4 or more serves per day	11.8 (1.3)	10.5 (1.6)	13.3 (1.6)	26.7 (2.8)	15.2 (1.2)	11.8 (0.8)
BOYS						
Don't eat fruit	1.2 (0.6)	1.4 (0.6)	1.6 (0.5)	2.1 (0.6)	1.6 (0.4)	1.3 (0.3)
1 serve or less per day	20.9 (2.2)	24.8 (2.2)	24.4 (2.2)	16.2 (1.6)	21.6 (1.3)	28.8 (1.5)
2 serves per day	41.4 (2.9)	41.7 (2.1)	38.2 (2.1)	24.1 (2.0)	36.6 (1.2)	36.6 (1.0)
3 serves per day	23.7 (2.7)	19.7 (1.8)	25.0 (2.3)	25.7 (1.9)	23.5 (1.5)	19.0 (0.9)
4 or more serves per day	12.8 (1.7)	12.4 (1.8)	10.9 (1.3)	31.8 (2.2)	16.8 (1.2)	14.2 (1.3)

Note: No significance testing was conducted.

Figure 5.1 Usual daily consumption of fruit among children in primary school by sex and year group in 2015 (%, 95%CI)



MEETING RECOMMENDED FRUIT SERVES

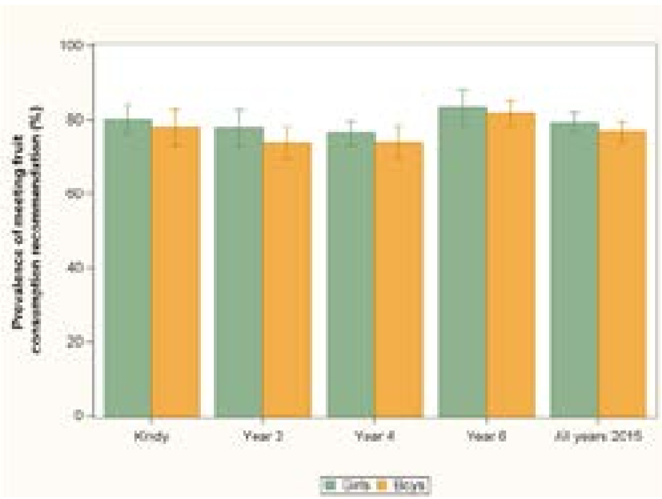
Table 5.2 and Figure 5.2 show the proportion of primary school children meeting the recommended daily serves of fruit in 2015, and in 2010 for comparison. Overall, 78% of children consumed the recommended amount of fruit, of at least two serves daily, in 2015. There were no significant differences between boys and girls meeting the recommended daily serves of fruit. The proportion of girls meeting the recommended daily serves of fruit significantly increased from 75% in 2010 to 79% in 2015; and the proportion of boys meeting the daily fruit recommendation significantly increased from 70% in 2010 to 77% in 2015.

Table 5.2 Prevalence of consuming the recommended daily serves of fruit (2 serves/day) among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Meet recommendation	79.0 (1.5)	75.9 (1.7)	75.3 (1.5)	82.4 (1.7)	78.1 (1.1)	**72.1 (1.3) b**
Do not meet recommendation	21.0 (1.5)	24.1 (1.7)	24.7 (1.5)	17.6 (1.7)	21.9 (1.1)	27.9 (1.3)
GIRLS						
Meet recommendation	80.1 (2.0)	77.8 (2.3)	76.5 (1.6)	83.2 (2.4)	79.3 (1.3)	**74.6 (1.5) b**
Do not meet recommendation	19.9 (2.0)	22.2 (2.3)	23.5 (1.6)	16.8 (2.4)	20.7 (1.3)	25.4 (1.5)
BOYS						
Meet recommendation	77.9 (2.3)	73.8 (2.2)	74.0 (2.2)	81.7 (1.8)	76.8 (1.4)	**69.8 (1.5) b**
Do not meet recommendation	22.1 (2.3)	26.2 (2.2)	26.0 (2.2)	18.3 (1.8)	23.2 (1.4)	30.2 (1.5)

a *Indicates statistically significant difference at P < 0.05. Comparisons are between boys and girls within each year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each category.*
No letter means there was no statistical difference.

Figure 5.2 Prevalence of consuming the recommended daily serves of fruit among children in primary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately four out of five primary school children met the recommended daily serves of fruit. Table 5.3 and Figure 5.3 show the proportion of children meeting the recommended daily serves of fruit by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, primary school children in rural areas, and in Year K in particular, were significantly more likely to eat the recommended daily serves of fruit compared with children in urban areas. Girls from rural areas in Years K and 4 were significantly more likely to meet the recommended daily serves of fruit, compared with girls from urban areas.

Change between 2010-2015: The proportion of children eating at least two servings of fruit per day significantly increased from 72% to 77% in children from urban areas, and from 71% to 82% in children from rural areas between 2010 and 2015, respectively.

Socio-economic status

2015: Overall, there were no significant differences in meeting the recommended daily serves of fruit between children from different socio-economic backgrounds.

Change between 2010-2015: Overall, the prevalence of meeting the recommended daily serves of fruit significantly increased by approximately 9% (from 67% to 76%) among children from low SES backgrounds; and by approximately 5% (from 74% to 79%) among children from high SES backgrounds, between 2010 and 2015 respectively. The prevalence significantly increased among boys from low SES backgrounds (from 64% in 2010 to 73% in 2015); among girls from low SES backgrounds (from 71% in 2010 to 79% in 2015); and among boys from high SES backgrounds (from 72% in 2010 to 79% in 2015).

Cultural background

2015: Overall, the prevalence of meeting the recommended daily serves of fruit was significantly lower among children, particularly boys of all ages, from Asian cultural backgrounds (67%), compared with children from English-speaking backgrounds (79%). The prevalence was significantly lower for boys (61%) and girls (71%) from Asian cultural backgrounds, compared with boys and girls from English-speaking backgrounds (78% and 80%, respectively).

Change between 2010-2015: The prevalence of meeting the recommended daily serves of fruit significantly increased among children from English-speaking backgrounds, from 2010 (73%) to 2015 (79%).

Weight status

2015: Overall there were no significant differences in meeting the recommended daily serves of fruit between children from different BMI categories.

Change between 2010-2015: Overall, the proportion of children meeting the recommended daily serves of fruit significantly increased by between 5% and 10% in each BMI category between 2010 and 2015: from 66% to 76%, from 74% to 79%, from 71% to 80% and from 65% to 75%, respectively, for the thin, healthy weight, overweight and obese categories.

Table 5.3 Prevalence of meeting the recommended daily serves of fruit among children in primary school by sex, year group, socio-demographic characteristics, and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Locality						
Urban (ref)	77.7 (1.7)	75.0 (2.0)	74.1 (1.7)	82.0 (2.0)	77.1 (1.3)	**72.3 (1.3) b**
Rural	**84.3 (2.5) a**	79.1 (3.3)	79.1 (2.2)	83.9 (2.5)	**81.6 (1.6) a**	**71.1 (5.3) b**
SES						
Low	79.1 (3.1)	70.9 (2.6)	74.3 (2.3)	**78.4 (3.3) a**	75.8 (1.7)	**67.1 (2.2) b**
Middle	80.1 (2.6)	77.3 (3.0)	75.0 (2.4)	81.8 (2.8)	78.6 (1.8)	74.2 (1.8)
High (ref)	78.2 (1.9)	77.0 (2.4)	76.0 (2.1)	85.3 (2.0)	78.9 (1.5)	**74.2 (1.9) b**
Cultural background						
English (ref)	80.2 (1.4)	77.2 (1.9)	76.4 (1.6)	82.0 (1.8)	78.9 (1.1)	**72.6 (1.4) b**
European	85.7 (7.3)	72.8 (9.7)	86.4 (9.0)	89.4 (7.7)	82.4 (4.5)	75.5 (6.5)
Middle Eastern	74.4 (6.3)	79.6 (6.0)	73.9 (5.8)	90.0 (2.9)	79.2 (3.1)	70.9 (3.2)
Asian	71.1 (6.0)	**57.9 (6.4) a**	**59.8 (5.7) a**	81.9 (7.1)	**67.0 (3.8) a**	66.3 (2.4)
BMI category						
Thin	76.5 (4.8)	75.6 (5.6)	71.0 (6.4)	81.0 (5.0)	81.0 (2.8)	**66.0 (2.6) b**
Healthy weight (ref)	79.6 (1.6)	75.3 (1.8)	75.8 (1.7)	83.4 (1.8)	83.4 (1.2)	**74.1 (1.4) b**
Overweight	80.6 (3.9)	80.3 (3.8)	77.4 (2.7)	81.1 (2.9)	81.1 (1.9)	**70.5 (1.8) b**
Obese	74.3 (6.0)	72.8 (5.8)	74.9 (4.6)	77.8 (5.9)	77.8 (2.9)	**64.5 (4.1) b**
GIRLS						
Locality						
Urban (ref)	78.7 (2.3)	76.7 (2.7)	75.2 (1.9)	82.4 (2.8)	78.2 (1.5)	74.8 (1.5)
Rural	**85.7 (2.0) a**	82.7 (3.8)	80.7 (2.0) a	85.9 (3.9)	**83.7 (1.4) a**	**73.3 (6.4) b**
SES						
Low	82.3 (2.5)	74.7 (3.6)	77.2 (2.8)	79.6 (5.1)	78.7 (1.8)	**70.7 (2.3) b**
Middle	83.0 (3.0)	79.0 (3.6)	77.4 (2.6)	80.4 (3.8)	79.9 (2.1)	76.3 (2.1)
High (ref)	77.1 (3.3)	78.1 (3.1)	75.3 (2.4)	87.4 (3.1)	79.1 (1.9)	76.3 (2.6)
Cultural background						
English (ref)	80.6 (2.3)	78.5 (2.5)	78.3 (1.9)	82.9 (2.4)	80.0 (1.5)	**75.2 (1.6) b**
European	87.5 (8.7)	74.2 (15.8)	100.0 (0.0)	89.9 (9.9)	86.7 (6.1)	74.5 (7.8)
Middle Eastern	83.7 (8.5)	85.9 (7.0)	**60.4 (6.1) a**	85.6 (8.2)	78.6 (2.5)	74.2 (2.8)
Asian	75.3 (7.2)	66.3 (9.2)	**61.6 (8.5) a**	83.3 (8.8)	**71.2 (4.3) a**	67.2 (2.9)
BMI category						
Thin	77.4 (5.4)	**62.4 (9.2) a**	67.6 (8.0)	79.5 (6.7)	**72.3 (3.5) a**	70.0 (4.0)
Healthy weight (ref)	79.8 (2.5)	78.9 (2.2)	76.2 (2.0)	84.2 (2.8)	79.7 (1.5)	76.4 (1.7)
Overweight	80.5 (5.5)	80.9 (4.5)	82.3 (3.4)	83.3 (3.8)	81.8 (2.1)	**72.1 (2.4) b**
Obese	81.2 (8.4)	70.8 (8.1)	75.1 (4.7)	77.1 (7.1)	75.9 (4.1)	67.1 (4.9)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
BOYS						
Locality						
Urban (ref)	76.6 (2.8)	73.2 (2.4)	72.9 (2.6)	81.5 (2.3)	76.0 (1.6)	**69.9 (1.5) b**
Rural	83.0 (3.5)	75.9 (5.1)	77.5 (4.1)	82.2 (2.2)	79.7 (2.4)	**69.5 (4.6) b**
SES						
Low	75.8 (4.8)	67.8 (4.4)	71.5 (4.3)	77.2 (3.7)	73.0 (3.0)	**63.7 (3.1) b**
Middle	77.0 (4.7)	75.5 (4.4)	72.2 (3.4)	83.1 (3.0)	77.2 (2.2)	72.4 (1.8)
High (ref)	79.4 (2.8)	75.6 (2.7)	76.7 (3.3)	82.9 (2.4)	78.6 (1.8)	**72.2 (2.1) b**
Cultural background						
English (ref)	79.7 (2.2)	75.8 (2.3)	74.4 (2.3)	81.1 (1.9)	77.8	70.3 (1.5)
European	82.7 (12.9)	72.0 (11.7)	74.2 (16.5)	88.5 (11.7)	77.8	76.6 (9.7)
Middle Eastern	65.3 (9.5)	72.6 (9.8)	89.2 (7.2)	93.9 (3.3)	79.8	68.0 (4.6)
Asian	**62.7 (10.0) a**	**46.8 (7.1) a**	**57.3 (8.6) a**	80.3 (7.9)	**60.5 (4.9) a**	65.4 (3.4)
BMI category						
Thin	75.6 (7.0)	**91.8 (4.5) a**	74.7 (8.2)	83.7 (7.0)	80.5 (4.0)	**61.9 (3.5) b**
Healthy weight (ref)	79.4 (2.2)	71.6 (2.8)	75.4 (2.6)	82.6 (2.2)	77.3 (1.4)	**72.1 (1.5) b**
Overweight	80.6 (5.8)	79.6 (5.7)	72.0 (4.5)	79.4 (3.2)	77.7 (2.6)	**68.9 (2.5) b**
Obese	66.1 (10.2)	74.9 (7.2)	74.6 (6.9)	78.5 (6.8)	73.7 (3.5)	62.0 (5.1)

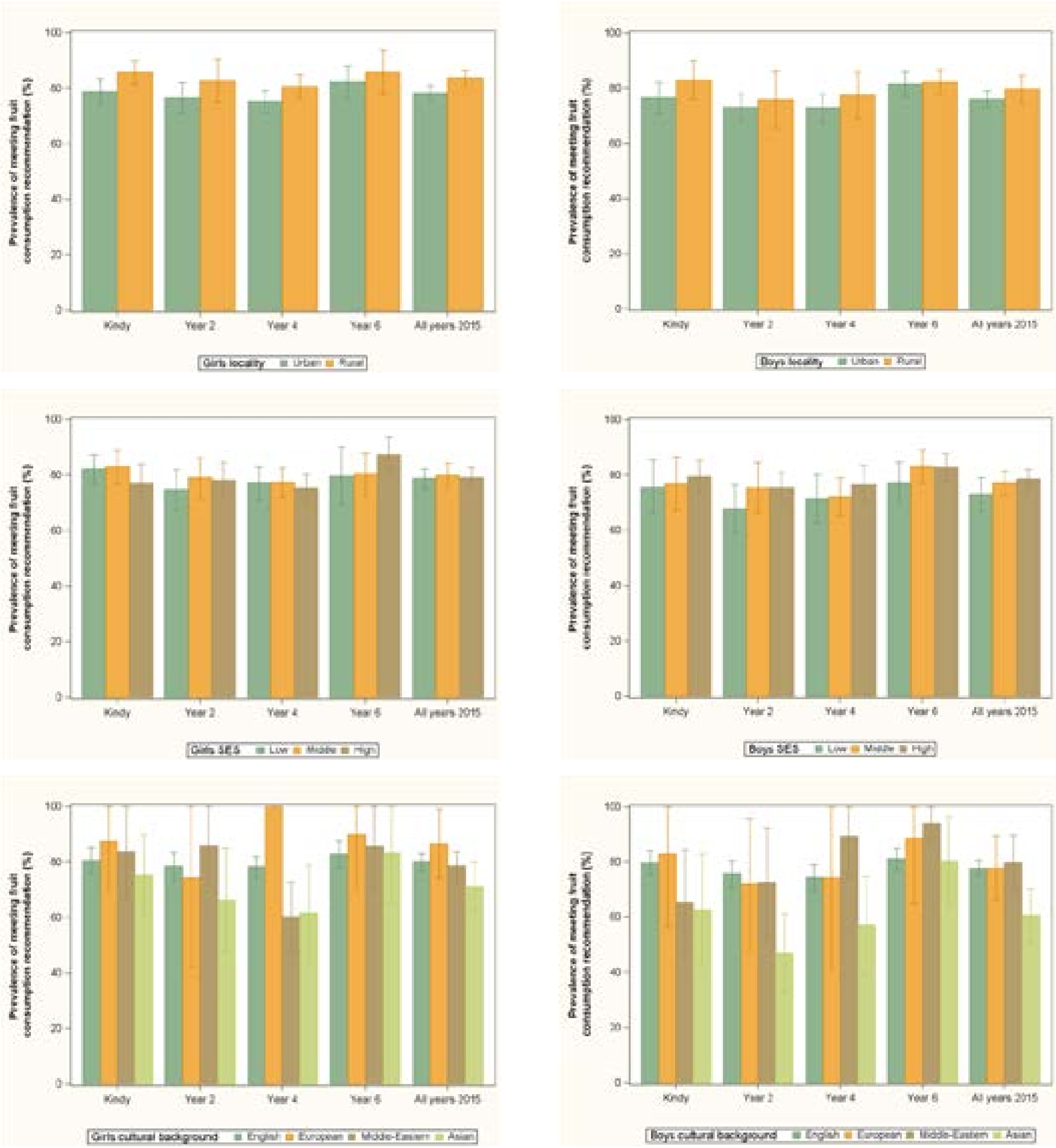
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

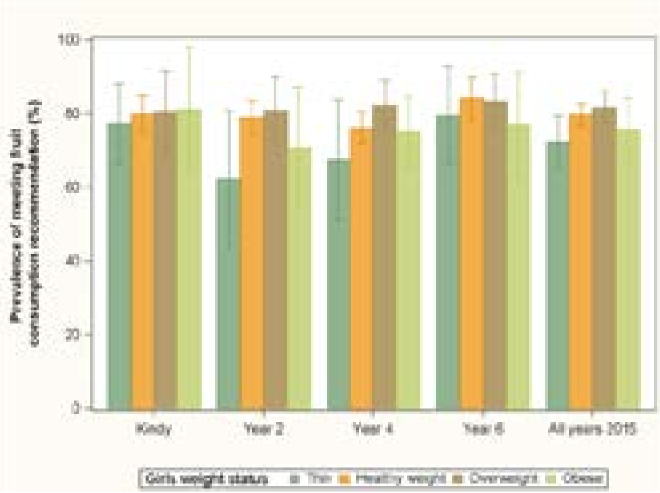
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

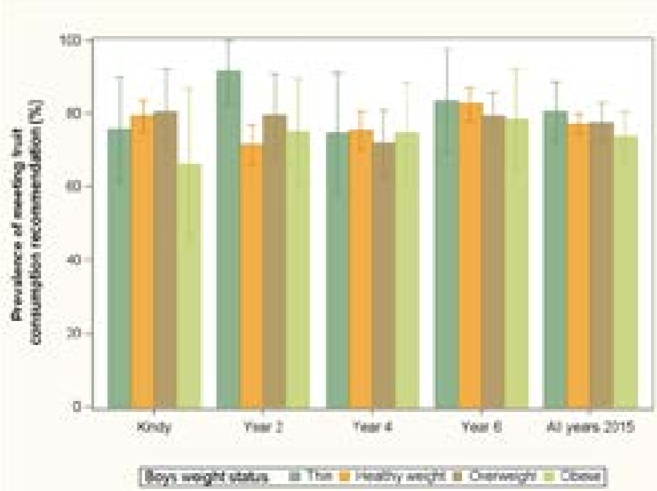
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 5.3 Prevalence of meeting the recommended daily serves of fruit among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, 95%CI)







CONSUMPTION OF VEGETABLES

Vegetables are an important source of vitamins, minerals, phytochemicals, carbohydrates and dietary fibre. Similar to fruit, there is a wealth of evidence suggesting that vegetable consumption reduces the risk of several chronic diseases such as cardiovascular disease and some cancers.[7]

The current Australian Dietary Guidelines recommend children age 4-8 years (corresponding to Years K and 2) consume at least four and a half serves of vegetables per day and children age 9-11 years (corresponding to Years 4 and 6) consume at least five serves.[4] For ease of reporting, we have standardised the interpretation of recommendations so that for this survey children met the Australian Dietary Guidelines if they consumed at least five serves of vegetables per day.

Between SPANS 2010 and 2015, new Australian Dietary Guidelines[4] were released with revised recommendations for daily serves of vegetables. In 2010, the dietary guidelines recommended that children age 4-7 years (corresponding to Year K and year 2) consume at least two serves of vegetables a day and children age 8-11 years (corresponding to Years 4 and 6) consume at least three serves of vegetables a day.[8] The new daily vegetables consumption recommendations have been applied to the SPANS 2010 data presented here to enable a direct comparison between survey periods.

Validation studies for this question indicate good agreement with more detailed measures of dietary intake, although intakes are underestimated at the lower end of consumption, suggesting children who report low intakes may in reality be consuming higher amounts.[10, 11]

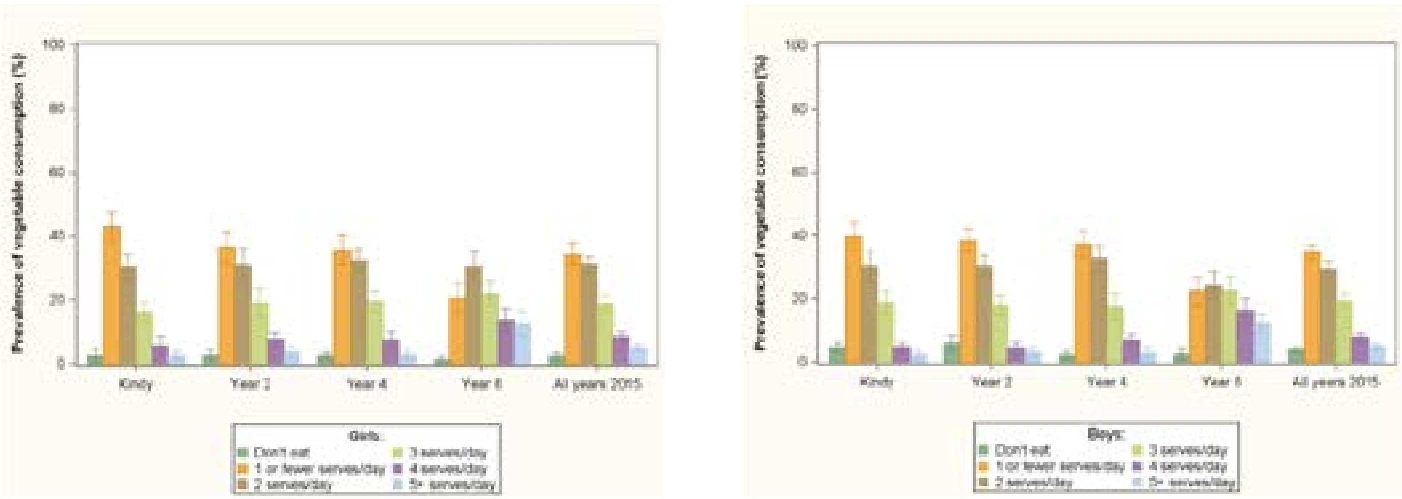
Table 5.4 and Figure 5.4 show the usual consumption of vegetables in primary school children in 2015, and in 2010 for comparison. Overall, 35% of children consumed one or fewer serves of vegetables per day and a small proportion of children (3%) did not eat vegetables. Only 5% of children consumed five or more serves of vegetables per day. There were no obvious differences in consumption levels between boys and girls.

Table 5.4 Usual daily consumption of vegetables among children in primary school by sex and year group in 2015 and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Don't eat vegetables	3.5 (0.7)	4.2 (0.8)	2.4 (0.4)	1.8 (0.7)	3.0 (0.4)	2.3 (0.3)
1 serve or less per day	41.2 (1.9)	37.4 (1.5)	36.4 (1.7)	21.5 (1.7)	34.5 (1.2)	37.5 (1.1)
2 serves per day	30.4 (1.8)	30.6 (1.6)	32.7 (1.4)	27.3 (1.7)	30.3 (1.1)	30.6 (0.8)
3 serves per day	17.4 (1.3)	18.6 (1.2)	18.6 (1.3)	22.2 (1.7)	19.1 (0.9)	18.9 (0.8)
4 serves per day	5.2 (0.8)	6.0 (0.7)	7.2 (0.7)	14.8 (1.3)	8.1 (0.4)	7.0 (0.6)
5 or more serves per day	2.3 (0.5)	3.3 (0.6)	2.7 (0.5)	12.4 (1.4)	5.0 (0.4)	3.7 (0.4)
GIRLS						
Don't eat vegetables	2.5 (1.0)	2.6 (0.8)	2.4 (0.6)	1.1 (0.6)	2.2 (0.6)	2.0 (0.4)
1 serve or less per day	42.8 (2.4)	36.4 (2.4)	35.6 (2.4)	20.6 (2.4)	34.3 (1.7)	37.2 (1.4)
2 serves per day	30.4 (1.9)	30.8 (2.5)	32.6 (1.6)	30.3 (2.5)	31.0 (1.3)	31.5 (1.3)
3 serves per day	16.1 (1.4)	19.1 (2.1)	19.5 (1.6)	21.9 (2.0)	19.0 (1.3)	18.7 (0.9)
4 serves per day	5.7 (1.4)	7.6 (1.0)	7.3 (1.3)	13.7 (1.6)	8.4 (0.7)	6.9 (0.7)
5 or more serves per day	2.4 (0.7)	3.5 (0.9)	2.6 (0.6)	12.4 (2.0)	5.0 (0.5)	3.8 (0.5)
BOYS						
Don't eat vegetables	4.5 (0.8)	5.9 (1.2)	2.3 (0.6)	2.5 (0.8)	3.9 (0.5)	2.5 (0.4)
1 serve or less per day	39.7 (2.2)	38.5 (1.8)	37.3 (2.1)	22.4 (2.1)	34.8 (1.1)	37.9 (1.2)
2 serves per day	30.3 (2.3)	30.4 (1.6)	32.8 (2.0)	24.3 (2.0)	29.5 (1.2)	29.7 (1.0)
3 serves per day	18.7 (1.9)	18.0 (1.5)	17.7 (2.0)	22.6 (2.1)	19.2 (1.1)	19.0 (1.1)
4 serves per day	4.6 (0.9)	4.3 (1.0)	7.1 (0.9)	15.9 (2.0)	7.8 (0.7)	7.2 (0.8)
5 or more serves per day	2.2 (0.7)	3.0 (0.8)	2.9 (0.8)	12.4 (1.4)	4.9 (0.6)	3.7 (0.5)

Note: No significance testing was conducted.

Figure 5.4 Usual daily consumption of vegetables among children in primary school by sex and year group in 2015 (%, 95%CI)



MEETING RECOMMENDED DAILY SERVES OF VEGETABLES

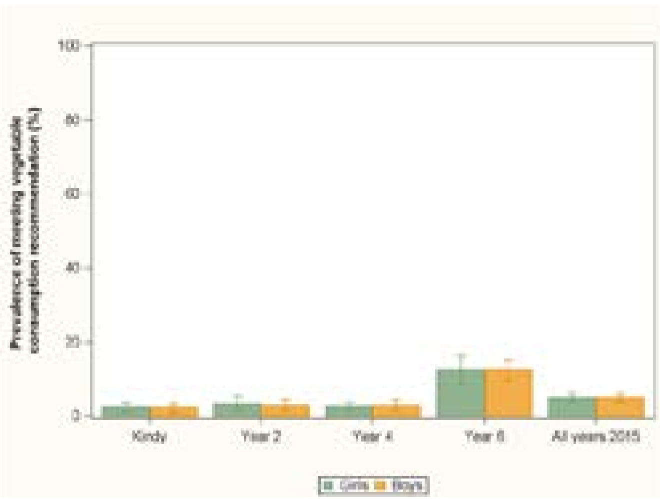
Table 5.5 and Figure 5.5 show the proportion of primary school children meeting the recommended daily serves of vegetables in 2015, and in 2010 for comparison. Overall, 5% of children reported consuming the recommended amount of vegetables (at least five serves per day). There were no significant differences between boys and girls and meeting the daily vegetables recommendation. The proportion of children meeting the recommended daily serves of vegetables increased significantly from 4% in 2010 to 5% in 2015.

Table 5.5 Prevalence of meeting the recommended number of serves of vegetables a day among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Meets recommendation	2.3 (0.5)	3.3 (0.6)	2.7 (0.5)	12.4 (1.4)	5.0 (0.4)	**3.7 (0.4) b**
Does not meet recommendation	97.7 (0.5)	96.7 (0.6)	97.3 (0.5)	87.6 (1.4)	95.0 (0.4)	96.3 (0.4)
GIRLS						
Meets recommendation	2.4 (0.7)	3.5 (0.9)	2.6 (0.6)	12.4 (2.0)	5.0 (0.5)	3.8 (0.5)
Does not meet recommendation	97.6 (0.7)	96.5 (0.9)	97.4 (0.6)	87.6 (2.0)	95.0 (0.5)	96.2 (0.5)
BOYS						
Meets recommendation	2.2 (0.7)	3.0 (0.8)	2.9 (0.8)	12.4 (1.4)	4.9 (0.6)	3.7 (0.5)
Does not meet recommendation	97.8 (0.7)	97.0 (0.8)	97.1 (0.8)	87.6 (1.4)	95.1 (0.6)	96.3 (0.5)

a *Indicates statistically significant difference at $P < 0.05$. Comparisons are between boys and girls within each year group.*
b *Indicates statistically significant difference at $P < 0.05$ between 2010 and 2015 proportions for all children for each category.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 5.5 Prevalence of meeting the recommended daily serves of vegetables among children in primary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate only one in 20 primary school children (5%) met the daily recommendation for vegetables. Table 5.6 and Figure 5.6 show the proportion consuming the recommended number of vegetable serves per day by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: There were no significant differences in the prevalence of meeting the recommended daily serves of vegetables between children from urban and rural backgrounds.

Change between 2010-2015: The proportion of urban primary school children consuming at least five servings of vegetables daily increased significantly from 4% in 2010 to 5% in 2015.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of meeting the recommended daily serves of vegetables between children from different SES backgrounds.

Change between 2010-2015: Overall, the proportion of children meeting the recommended daily serves of vegetables significantly increased by approximately 2% in children from the middle SES tertile, from 4% to 6%, between 2010 and 2015.

Cultural background

2015: Overall, there were no significant differences in meeting the recommended daily serves of vegetables among children from different cultural backgrounds.

Change between 2010-2015: The prevalence of meeting the recommended daily serves of vegetables significantly increased among children from English-speaking backgrounds, from 4% in 2010 to 5% in 2015; and children from Asian cultural backgrounds, from 2% in 2010 to 5% in 2015.

Weight status

2015: Overall, there were no significant differences in meeting the recommended daily serves of vegetables among children from different BMI categories.

Change between 2010-2015: The prevalence of meeting the recommended daily serves of vegetables significantly increased among children in the thin BMI category, from 2% in 2010 to 5% in 2015; and among children in the overweight BMI category, from 3% in 2010 to 6% in 2015.

Table 5.6 Prevalence of meeting the recommended daily serves of vegetables among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Locality						
Urban (ref)	2.2 (0.5)	3.2 (0.7)	2.7 (0.6)	11.9 (1.4)	4.8 (0.5)	**3.6 (0.4) b**
Rural	3.0 (0.9)	3.5 (1.0)	2.9 (0.9)	13.8 (3.7)	5.8 (1.0)	4.8 (0.6)
SES						
Low	2.1 (1.1)	**6.3 (1.6) a**	3.3 (1.2)	10.2 (3.9)	5.3 (1.2)	3.6 (0.7)
Middle	1.9 (0.7)	2.9 (0.7)	**3.9 (1.0) a**	13.9 (2.0)	5.7 (0.6)	**4.1 (0.5) b**
High (ref)	2.7 (0.7)	2.1 (0.8)	1.5 (0.6)	12.2 (2.0)	4.3 (0.6)	3.3 (0.7)
Cultural background						
English (ref)	2.1 (0.4)	3.3 (0.7)	2.6 (0.5)	12.7 (1.5)	5.1 (0.4)	**3.8 (0.4) b**
European	7.2 (6.6)	na	na	na	1.7 (1.7)	8.6 (7.2)
Middle Eastern	2.8 (1.2)	3.7 (3.0)	4.3 (3.3)	6.7 (4.0)	4.3 (2.0)	5.0 (1.6)
Asian	3.4 (2.7)	2.3 (1.7)	3.0 (2.0)	18.4 (4.8)	5.4 (1.4)	**1.6 (0.5) b**
BMI category						
Thin	1.6 (1.5)	na	5.2 (2.8)	13.1 (3.9)	5.1 (1.2)	**1.8 (0.9) b**
Healthy weight (ref)	2.1 (0.5)	3.6 (0.9)	2.4 (0.5)	12.4 (1.5)	4.9 (0.5)	4.2 (0.4)
Overweight	4.5 (2.1)	2.3 (1.2)	4.0 (1.5)	11.9 (2.8)	6.1 (1.1)	**2.9 (0.6) b**
Obese	1.7 (1.7)	5.8 (3.0)	1.3 (1.0)	12.7 (5.6)	5.1 (1.6)	2.5 (0.8)
GIRLS						
Locality						
Urban (ref)	2.5 (0.8)	3.3 (1.1)	2.7 (0.8)	11.7 (2.0)	4.8 (0.6)	3.7 (0.5)
Rural	2.0 (1.3)	4.3 (1.8)	2.5 (1.2)	15.0 (5.4)	5.8 (1.0)	4.6 (1.4)
SES						
Low	2.9 (2.0)	**9.3 (3.8) a**	**5.4 (2.5) a**	10.4 (5.6)	6.8 (1.7)	**3.1 (0.7) b**
Middle	1.7 (0.9)	3.3 (1.0)	3.0 (1.1)	13.2 (2.6)	5.2 (0.9)	4.3 (0.7)
High (ref)	2.8 (0.9)	1.5 (0.7)	1.0 (0.4)	12.7 (2.8)	4.1 (0.7)	3.7 (0.9)
Cultural background						
English (ref)	2.0 (0.6)	3.7 (1.0)	2.8 (0.7)	13.0 (2.1)	5.3 (0.6)	3.9 (0.5)
European	11.4 (10.8)	na	na	na	3.2 (3.2)	2.1 (2.0)
Middle Eastern	5.9 (3.1)	na	1.9 (2.0)	**3.4 (1.7) a**	2.7 (1.2)	5.1 (1.6)
Asian	3.5 (3.6)	2.6 (2.5)	na	14.1 (5.7)	4.0 (1.6)	2.4 (0.9)
BMI category						
Thin	3.0 (3.0)	na	na	19.8 (5.9)	6.5 (1.9)	**1.6 (0.9) b**
Healthy weight (ref)	1.9 (0.7)	4.1 (1.3)	3.3 (0.9)	11.3 (2.1)	4.9 (0.6)	4.1 (0.5)
Overweight	5.3 (3.0)	0.8 (0.8)	2.5 (1.5)	11.2 (2.9)	4.8 (1.0)	3.2 (0.8)
Obese	na	7.6 (5.4)	1.0 (1.0)	16.0 (9.6)	5.7 (2.8)	2.9 (1.2)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
BOYS						
Locality						
Urban (ref)	1.8 (0.7)	3.0 (0.9)	2.7 (0.9)	12.2 (1.6)	4.7 (0.6)	3.5 (0.5)
Rural	3.8 (1.5)	2.7 (1.5)	3.4 (1.5)	12.8 (2.5)	5.7 (1.2)	4.9 (0.4)
SES						
Low	1.4 (0.8)	3.9 (1.9)	1.1 (1.1)	10.0 (3.2)	4.0 (1.4)	4.0 (1.0)
Middle	2.1 (1.2)	2.4 (1.0)	5.1 (1.7)	14.5 (2.3)	6.2 (1.0)	3.9 (0.7)
High (ref)	2.6 (1.1)	2.9 (1.4)	2.0 (1.1)	11.6 (2.4)	4.4 (0.9)	3.0 (0.8)
Cultural background						
English (ref)	2.3 (0.7)	2.9 (0.9)	2.5 (0.8)	12.5 (1.4)	4.9 (0.6)	3.8 (0.5)
European	na	na	na	na	na	16.3 (14.5)
Middle Eastern	na	7.5 (6.0)	7.3 (5.0)	9.5 (7.3)	5.9 (3.4)	4.8 (2.3)
Asian	3.4 (3.4)	1.9 (2.0)	7.1 (4.6)	23.4 (9.6)	7.5 (2.6)	**1.0 (0.7) b**
BMI category						
Thin	na	na	**11.1 (5.4) a**	na	3.2 (1.7)	2.0 (1.4)
Healthy weight (ref)	2.3 (0.7)	3.0 (1.0)	1.6 (0.6)	13.5 (1.8)	4.9 (0.6)	4.3 (0.5)
Overweight	3.5 (2.4)	4.4 (2.5)	**5.6 (2.3) a**	12.4 (3.9)	7.4 (1.8)	**2.6 (0.8) b**
Obese	3.6 (3.7)	3.9 (2.6)	1.6 (1.6)	9.3 (4.6)	4.4 (1.7)	2.0 (1.1)

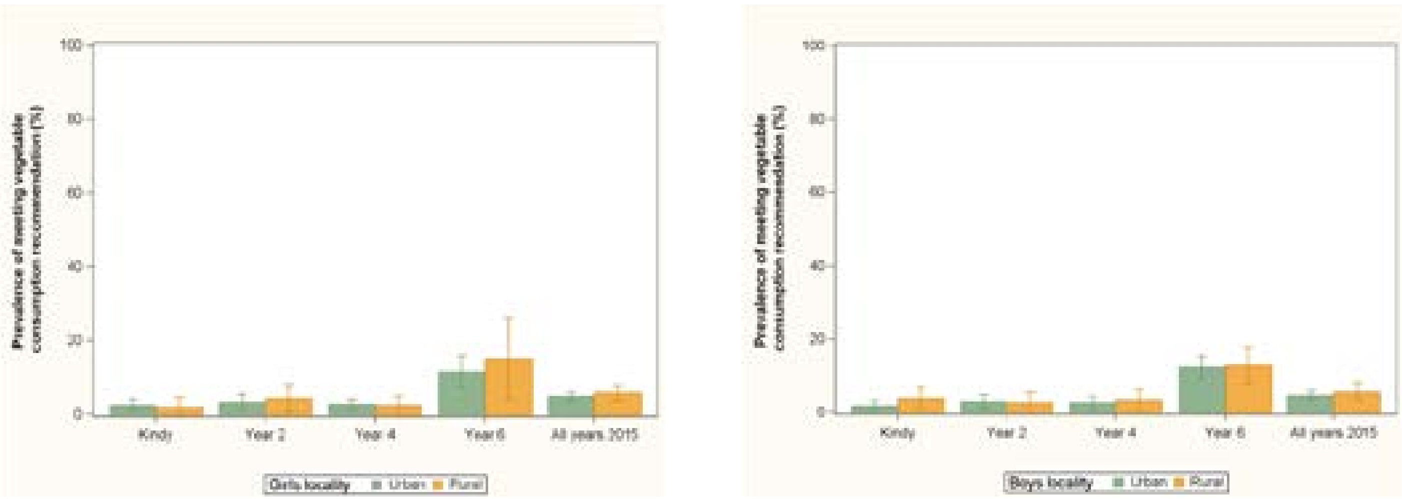
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

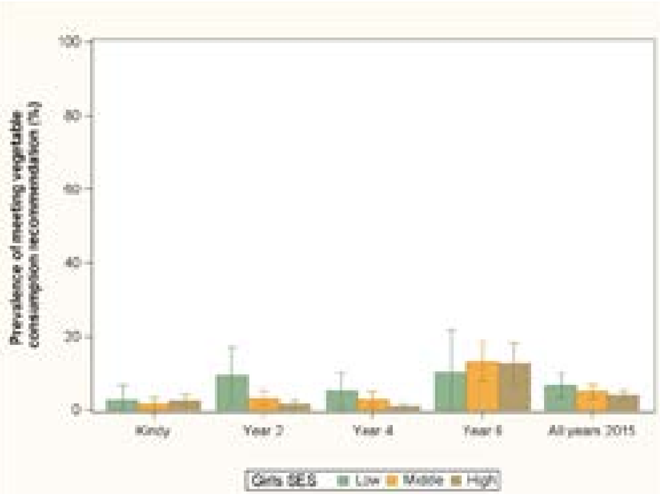
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

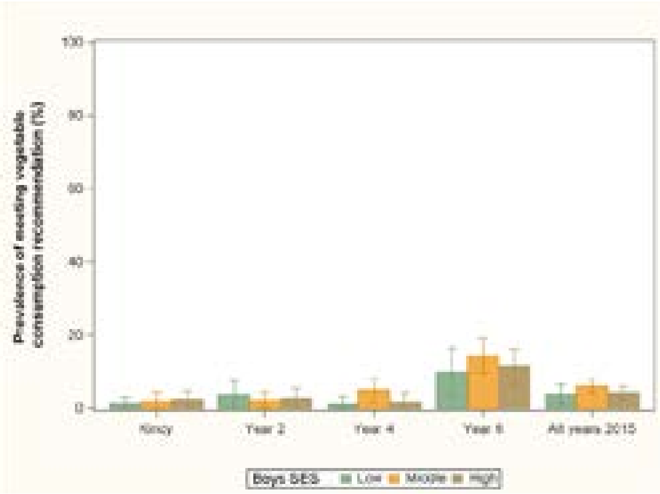
na *Indicates statistical significance could not be calculated due to low numbers.*

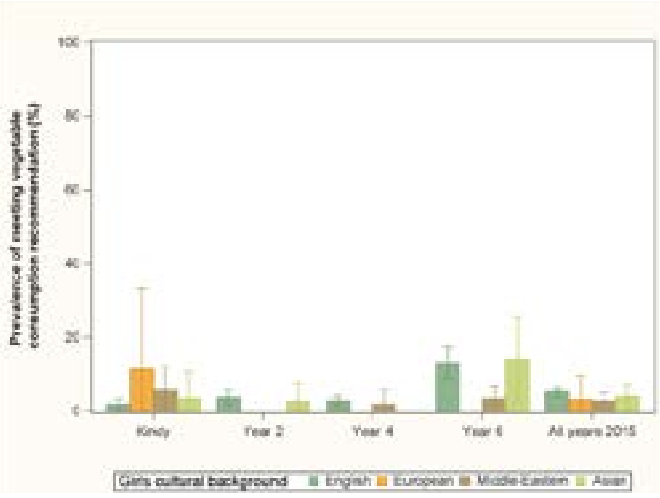
No letter means there was no statistical difference.

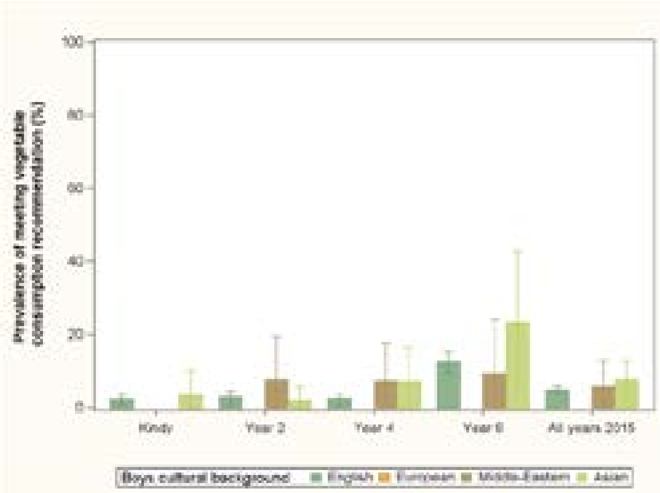
Figure 5.6 Prevalence of meeting the recommended daily serves of vegetables among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, 95%CI)

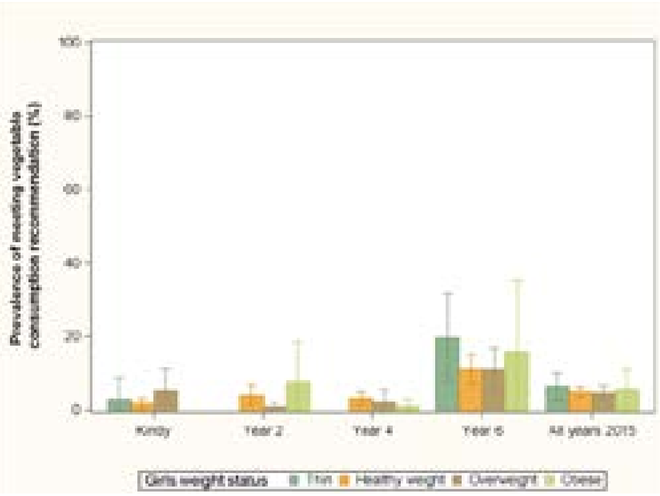


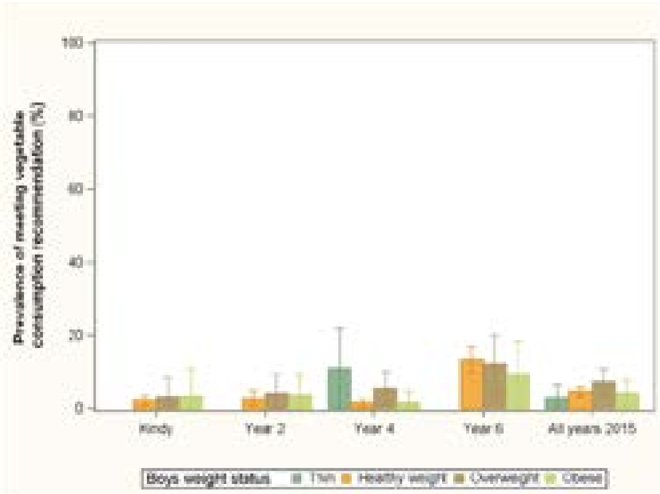

Prevalence of meeting vegetable consumption recommendation (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls SES
Low
Middle
High


Prevalence of meeting vegetable consumption recommendation (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys SES
Low
Middle
High


Prevalence of meeting vegetable consumption recommendation (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting vegetable consumption recommendation (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting vegetable consumption recommendation (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of meeting vegetable consumption recommendation (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

RED MEAT INTAKE

Red meat such as beef and lamb contribute valuable nutrients such as iron, protein, zinc and vitamin B12 to the diets of children and adolescents. However, regular consumption of larger quantities of red meat may be associated with increased risk of colorectal cancer in later life.[12]

The current recommendations in the Australian Dietary Guidelines for lean meats (and poultry, fish, eggs, tofu, nuts, and seeds; and legumes/beans) are one and a half serves per day for children age 4-8 years and two and a half serves in children age 9-18 years. The SPANS 2015 questionnaire asked about the frequency of consumption and not serving sizes of meat per day. Validation studies show that the question used is able to distinguish between low and high consumers of red meat.[10]

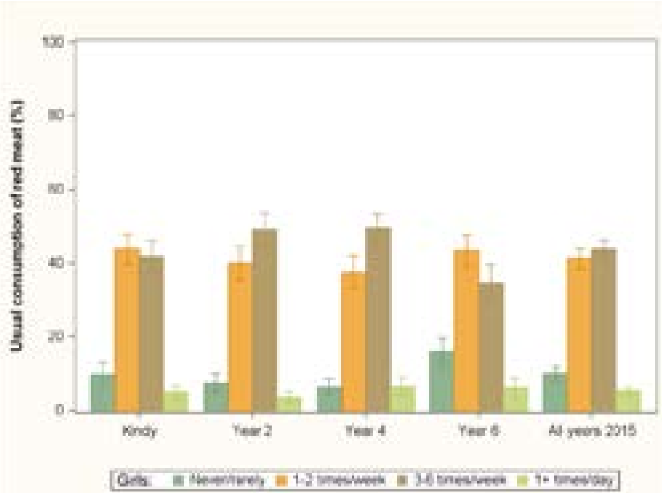
Table 5.7 and Figure 5.7 show the frequency of usually consuming red meat among primary school children in 2015, and in 2010 for comparison. Overall, 48% of children consumed red meat more than 3 times per week. Frequency of intake at least three times a week appeared to be lower in Year 6 children (38%) than in other years. Approximately 10% of children rarely or never ate red meat. The frequency of eating red meat appeared to be broadly consistent across year groups. Overall, daily consumption of red meat appeared to have decreased between 2010 and 2015.

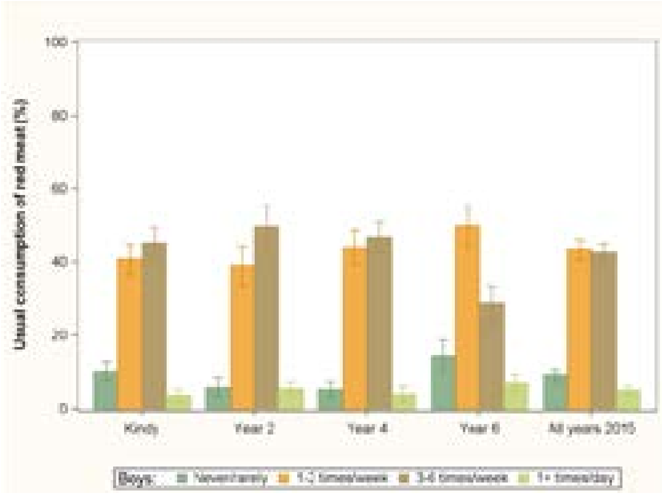
Table 5.7 Usual consumption of red meat among children in primary school by sex and year group in 2015 and in 2010 for comparison (%, SE))

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Never/rarely	10.0 (1.2)	6.7 (0.9)	5.9 (0.8)	15.2 (1.5)	9.5 (0.7)	7.9 (0.7)
1-2 times per week	42.3 (1.5)	39.5 (1.8)	40.7 (1.8)	46.6 (1.6)	42.3 (1.1)	39.3 (1.0)
3-6 times per week	43.5 (1.6)	49.4 (1.8)	48.2 (1.6)	31.7 (1.6)	43.2 (1.0)	44.8 (1.3)
Once a day or more	4.2 (0.7)	4.4 (0.6)	5.3 (0.8)	6.5 (1.0)	5.1 (0.4)	8.0 (0.6)
GIRLS						
Never/rarely	9.8 (1.5)	7.6 (1.2)	6.5 (1.1)	16.0 (1.8)	10.0 (0.9)	8.3 (0.9)
1-2 times per week	43.7 (2.1)	40.0 (2.3)	37.5 (2.2)	43.3 (2.1)	41.2 (1.3)	40.0 (1.2)
3-6 times per week	41.7 (2.2)	49.0 (2.3)	49.4 (2.0)	34.6 (2.5)	43.7 (1.3)	44.5 (1.4)
Once a day or more	4.8 (1.0)	3.4 (0.7)	6.6 (1.2)	6.1 (1.3)	5.2 (0.6)	7.1 (0.8)
BOYS						
Never/rarely	10.3 (1.3)	5.8 (1.3)	5.2 (1.1)	14.4 (2.2)	9.0 (0.8)	7.5 (0.9)
1-2 times per week	40.8 (2.1)	39.0 (2.7)	44.1 (2.3)	49.9 (2.7)	43.4 (1.4)	38.7 (1.1)
3-6 times per week	45.4 (2.0)	49.8 (2.7)	46.8 (2.1)	28.8 (2.4)	42.6 (1.3)	45.0 (1.7)
Once a day or more	3.6 (0.8)	5.4 (0.9)	3.9 (1.0)	6.9 (1.1)	4.9 (0.5)	8.8 (0.8)

Note: No significance testing was conducted.

Figure 5.7 Usual consumption of red meat among children in primary school by sex and year group in 2015 (%, 95%CI)





CONSUMPTION OF PROCESSED MEAT

Processed meat such as sausages, frankfurters, devon, ham, hamburgers and chicken nuggets usually contain high amounts of fat, saturated fat and salt. A high consumption of processed meat has been associated with chronic diseases such as certain cancers, cardiovascular disease and diabetes[13]. The current Australian Dietary Guidelines recommend limiting processed meats including salami, bacon, sausages and burgers[4] and describe these meat products as 'discretionary choices'. Validation studies for the processed meat question used in SPANS show that this question is able to distinguish between low and high consumers of processed meat[10].

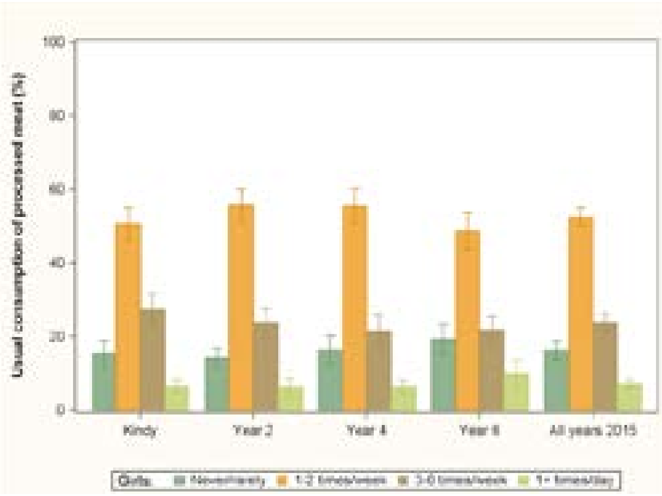
Table 5.8 and Figure 5.8 show the frequency of usually eating processed meat among primary school children in 2015, and in 2010 for comparison. Overall, 33% of children usually consumed processed meat three or more times a week. The frequency of eating processed meats appeared to be broadly consistent across year groups. Approximately 15% of children never or rarely consumed processed meat. There were some differences in consumption between boys and girls, with girls generally consuming processed meat less frequently. Overall, daily consumption of processed meats appeared to have decreased between 2010 and 2015.

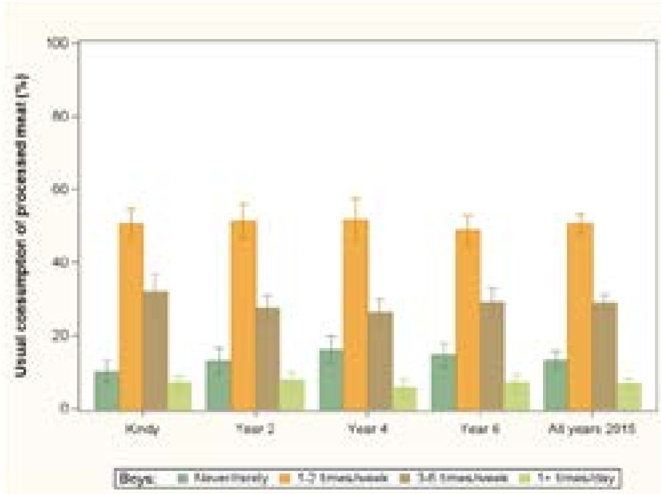
Table 5.8 Usual consumption of processed meat among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Never/rarely	12.8 (1.4)	13.6 (1.3)	16.3 (1.5)	17.1 (1.3)	14.9 (1.0)	14.4 (1.1)
1-2 times per week	50.5 (1.6)	53.7 (1.6)	53.7 (2.0)	48.8 (1.7)	51.7 (1.0)	50.3 (1.2)
3-6 times per week	29.8 (1.8)	25.7 (1.3)	23.9 (1.5)	25.5 (1.3)	26.3 (0.9)	25.6 (0.9)
Once a day or more	6.8 (0.7)	7.0 (0.8)	6.1 (0.9)	8.5 (1.2)	7.1 (0.5)	9.6 (0.8)
GIRLS						
Never/rarely	15.3 (1.8)	14.2 (1.4)	16.5 (1.9)	19.4 (2.1)	16.3 (1.2)	15.2 (1.3)
1-2 times per week	50.5 (2.3)	55.7 (2.2)	55.5 (2.4)	48.8 (2.5)	52.6 (1.2)	53.7 (1.4)
3-6 times per week	27.5 (2.2)	23.8 (2.0)	21.6 (2.1)	21.9 (1.8)	23.8 (1.2)	22.2 (1.3)
Once a day or more	6.6 (0.9)	6.3 (1.1)	6.4 (0.9)	9.9 (1.8)	7.3 (0.6)	8.9 (0.9)
BOYS						
Never/rarely	10.2 (1.5)	13.0 (1.8)	16.1 (1.9)	14.8 (1.7)	13.4 (1.2)	13.7 (1.2)
1-2 times per week	50.6 (2.0)	51.5 (2.3)	51.8 (2.9)	48.9 (2.1)	50.7 (1.3)	47.2 (1.4)
3-6 times per week	32.2 (2.4)	27.7 (1.6)	26.3 (1.9)	29.2 (2.0)	29.0 (1.1)	28.7 (1.1)
Once a day or more	7.1 (1.1)	7.7 (1.1)	5.8 (1.2)	7.1 (1.2)	6.9 (0.6)	10.3 (0.9)

Note: No significance testing was conducted.

Figure 5.8 Usual consumption of processed meat among children in primary school by sex and year group in 2015 (%, 95%CI)





CONSUMPTION OF FRIED POTATO PRODUCTS

Hot chips, french fries, wedges and fried potato are likely to contain large amounts of fat, saturated fat and/or salt. The latest Australian Dietary Guidelines recommend limiting intake of these foods and describe them as 'discretionary choices'. Validation studies indicate that the questions asked in SPANS 2015 and 2010 are able to distinguish between low and very high consumers of hot chips.[5, 14]

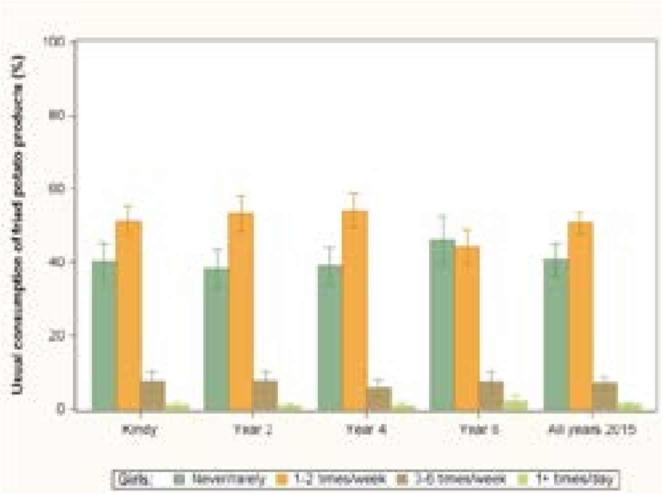
Table 5.9 and Figure 5.9 show the frequency of usually eating fried potato products among primary school children in 2015, and in 2010 for comparison. Overall, 41% of children never or rarely consumed fried potato products, while 51% consumed these products 1-2 times a week, 7% consumed these products 3-6 times a week, and only 1% reported eating fried potato products daily. The frequency of eating fried potato products appeared to be broadly consistent across all primary year groups. The proportion of children eating fried potato products daily appeared to have decreased between 2010 and 2015.

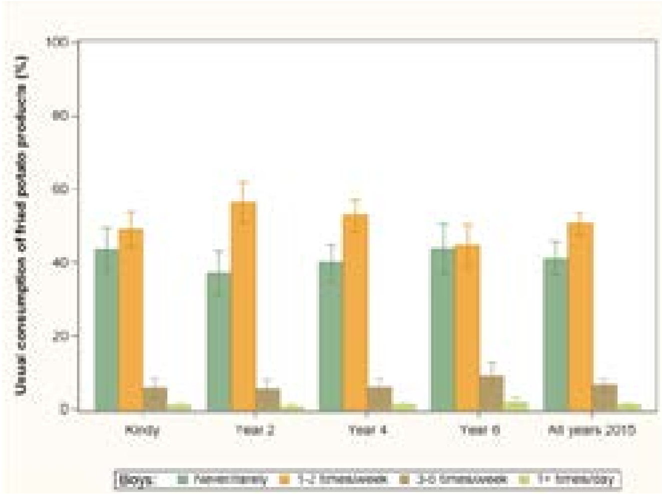
Table 5.9 Usual consumption of fried potato products among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Never/rarely	41.9 (2.5)	37.8 (2.3)	39.5 (2.2)	44.9 (2.8)	41.0 (2.0)	36.0 (2.0)
1-2 times per week	50.2 (2.0)	54.8 (2.0)	53.6 (1.7)	44.4 (2.2)	50.7 (1.3)	50.7 (1.3)
3-6 times per week	6.8 (1.2)	6.7 (1.0)	5.9 (1.0)	8.4 (1.3)	7.0 (0.8)	9.3 (0.9)
Once a day or more	1.1 (0.4)	0.7 (0.3)	1.1 (0.3)	2.3 (0.5)	1.3 (0.2)	4.0 (0.5)
GIRLS						
Never/rarely	40.1 (2.5)	38.2 (2.6)	39.0 (2.5)	46.0 (3.2)	40.7 (2.2)	37.1 (2.3)
1-2 times per week	51.3 (2.1)	53.3 (2.4)	54.2 (2.2)	44.2 (2.4)	50.8 (1.5)	50.7 (1.5)
3-6 times per week	7.6 (1.4)	7.7 (1.4)	5.9 (1.0)	7.4 (1.5)	7.2 (0.9)	9.0 (1.0)
Once a day or more	1.1 (0.5)	0.8 (0.3)	0.9 (0.4)	2.4 (0.8)	1.3 (0.3)	3.3 (0.5)
BOYS						
Never/rarely	43.7 (2.9)	37.3 (3.0)	40.0 (2.4)	43.8 (3.4)	41.3 (2.2)	35.0 (1.9)
1-2 times per week	49.2 (2.4)	56.4 (2.8)	52.9 (2.1)	44.6 (2.8)	50.7 (1.5)	50.7 (1.4)
3-6 times per week	5.9 (1.4)	5.6 (1.3)	6.0 (1.3)	9.4 (1.7)	6.7 (0.9)	9.7 (0.9)
Once a day or more	1.1 (0.5)	0.7 (0.4)	1.2 (0.5)	2.2 (0.6)	1.3 (0.3)	4.6 (0.6)

Note: No significance testing was conducted.

Figure 5.9 Usual consumption of fried potato products among children in primary school by sex and year group in 2015 (%, 95%CI)





CONSUMPTION OF POTATO CRISPS AND SALTY SNACKS

Potato crisps and other salty snacks such as Twisties and corn chips are energy-dense, nutrient-poor foods. The current Australian Dietary Guidelines recommend limiting these foods in the diets of children[4] and describe them as 'discretionary choices'. Validity information suggests this question is able to rank consumers according to intake and distinguishes between low and high consumers of potato crisps and salty snacks.[14]

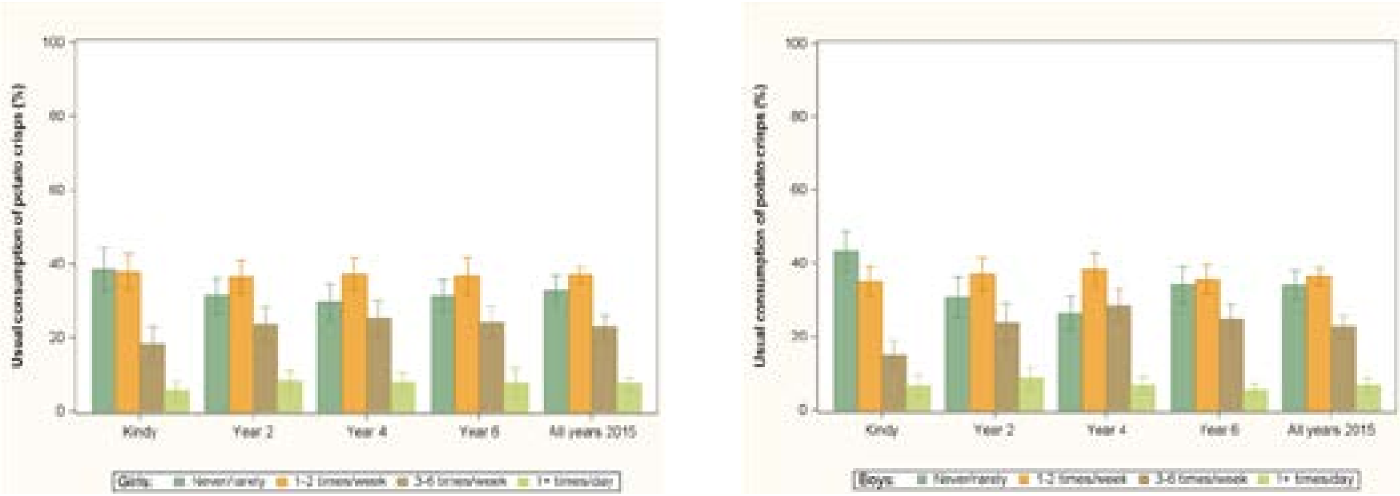
Table 5.10 and Figure 5.10 show the frequency of usually eating potato crisps among primary school children in 2015, and in 2010 for comparison. Overall, 33% of children never or rarely consumed potato crisps, 37% ate them 1-2 times per week, 23% reported consuming them 3-6 times a week and 7% reported consuming them daily. The frequency of eating potato crisps and salty snacks appeared to be broadly consistent across all primary year groups. The proportion of children eating potato crisps and salty snacks daily appeared to have decreased between 2010 and 2015.

Table 5.10 Usual consumption of potato chips and other salty snack products among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Never/rarely	40.9 (2.5)	31.1 (2.2)	28.1 (2.0)	32.7 (1.9)	33.4 (1.8)	29.2 (1.8)
1-2 times per week	36.4 (1.4)	36.7 (1.6)	37.7 (1.6)	36.2 (1.8)	36.7 (0.8)	35.0 (0.9)
3-6 times per week	16.7 (1.8)	23.7 (2.1)	26.8 (1.9)	24.5 (1.6)	22.7 (1.4)	26.5 (1.6)
Once a day or more	6.1 (1.1)	8.5 (1.2)	7.4 (0.9)	6.6 (1.0)	7.1 (0.8)	9.3 (0.9)
GIRLS						
Never/rarely	38.4 (3.0)	31.4 (2.4)	29.7 (2.5)	31.3 (2.2)	32.8 (2.0)	28.9 (2.0)
1-2 times per week	37.7 (2.5)	36.5 (2.2)	37.2 (2.2)	36.7 (2.5)	37.0 (1.1)	36.4 (1.4)
3-6 times per week	18.3 (2.3)	23.7 (2.3)	25.2 (2.5)	24.3 (2.1)	22.8 (1.6)	26.4 (2.0)
Once a day or more	5.6 (1.3)	8.4 (1.3)	7.9 (1.2)	7.7 (1.9)	7.4 (0.9)	8.3 (0.9)
BOYS						
Never/rarely	43.3 (2.8)	30.7 (2.8)	26.5 (2.2)	34.2 (2.4)	34.1 (1.9)	29.4 (1.8)
1-2 times per week	35.1 (1.9)	37.0 (2.3)	38.2 (2.3)	35.6 (2.0)	36.4 (1.1)	33.7 (1.1)
3-6 times per week	15.0 (1.9)	23.7 (2.7)	28.5 (2.1)	24.7 (2.0)	22.7 (1.5)	26.6 (1.5)
Once a day or more	6.6 (1.4)	8.6 (1.6)	6.7 (1.1)	5.5 (0.9)	6.8 (0.9)	10.3 (1.0)

Note: No significance testing was conducted.

Figure 5.10 Usual consumption of potato chips and other salty snack products among children in primary school by sex and year group in 2015 (%, 95%CI)



CONSUMPTION OF SNACK FOODS

Snack foods such as sweet and savoury biscuits, cakes, donuts or muesli bars are energy-dense, nutrient-poor foods. The current Australian Dietary Guidelines recommend limiting these foods in the diets of children and adolescents.[4] There is currently no validity information available for this question, but the reproducibility is moderate.[15]

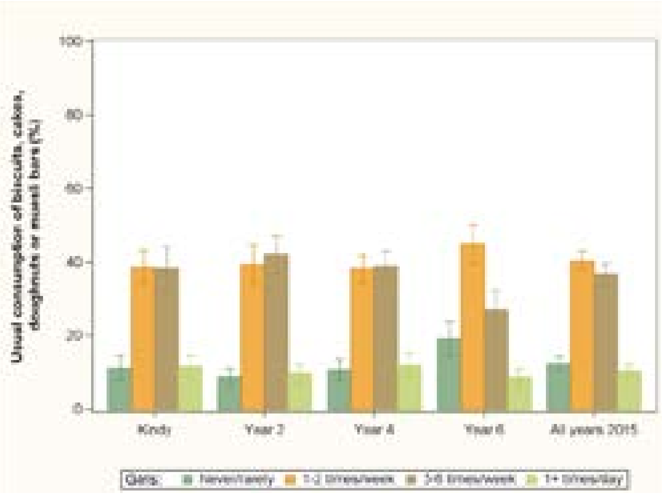
Table 5.11 and Figure 5.11 show frequency of usually eating snack food items including biscuits, cakes, doughnuts and muesli bars in primary school children in 2015, and in 2010 for comparison. Overall, 13% of children never or rarely consumed these snacks, 39% consumed snack foods 1-2 times a week, 37% consumed snack foods 3-6 times a week, and 11% usually consumed snack foods daily. Year 6 children were more likely than children in other years to report that they never or rarely consumed these snacks. The proportion of children consuming biscuits, cakes, doughnuts and muesli bars daily appeared to have decreased between 2010 and 2015.

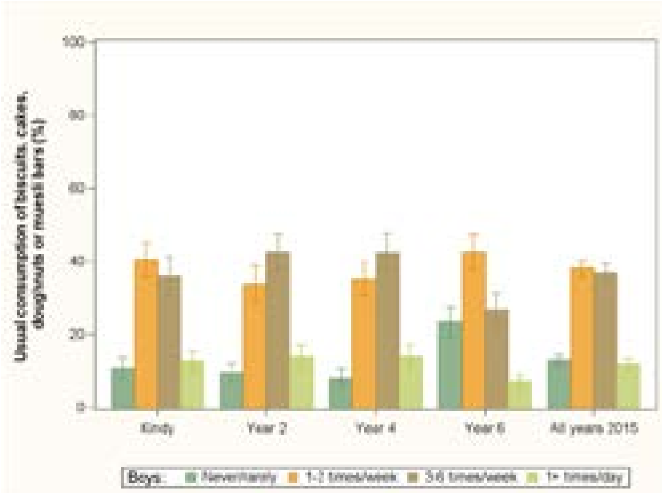
Table 5.11 Usual consumption of snack food products among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Never/rarely	11.1 (1.2)	9.2 (0.8)	9.6 (1.0)	21.3 (1.5)	12.7 (0.6)	10.7 (0.6)
1-2 times per week	39.6 (1.6)	36.8 (1.8)	36.8 (1.4)	43.8 (1.8)	39.3 (0.9)	36.0 (1.0)
3-6 times per week	37.2 (2.1)	42.3 (1.9)	40.7 (1.8)	27.0 (1.8)	36.8 (1.0)	38.8 (1.0)
Once a day or more	12.2 (0.8)	11.7 (0.9)	12.9 (1.2)	7.9 (0.8)	11.2 (0.6)	14.5 (0.7)
GIRLS						
Never/rarely	11.3 (1.6)	8.8 (1.2)	10.8 (1.4)	19.2 (2.4)	12.4 (0.9)	11.7 (0.7)
1-2 times per week	38.8 (2.1)	39.5 (2.6)	38.2 (1.8)	45.1 (2.6)	40.3 (1.2)	37.3 (1.1)
3-6 times per week	38.3 (2.9)	42.0 (2.5)	39.1 (1.9)	27.0 (2.6)	36.7 (1.5)	38.6 (1.2)
Once a day or more	11.6 (1.5)	9.7 (1.3)	11.9 (1.6)	8.7 (1.2)	10.5 (0.9)	12.5 (0.8)
BOYS						
Never/rarely	10.8 (1.4)	9.6 (1.3)	8.3 (1.3)	23.4 (2.0)	13.1 (0.7)	9.8 (0.9)
1-2 times per week	40.5 (2.3)	33.9 (2.5)	35.2 (2.3)	42.6 (2.4)	38.2 (1.1)	34.8 (1.2)
3-6 times per week	36.0 (2.6)	42.6 (2.4)	42.5 (2.6)	26.9 (2.1)	36.9 (1.2)	39.0 (1.4)
Once a day or more	12.7 (1.3)	13.9 (1.7)	14.0 (1.7)	7.1 (1.1)	11.9 (0.8)	16.4 (0.8)

Note: No significance testing was conducted.

Figure 5.11 Usual consumption of snack food products among children in primary school by sex and year group in 2015 (%, 95%CI)





CONSUMPTION OF CONFECTIONERY

Confectionery, such as lollies and chocolate, are energy-dense, nutrient-poor foods. The Australian Dietary Guidelines do not encourage consumption of confectionery and recommend limiting foods containing added sugar.[4] There is currently no validity information available for this question but the reproducibility was moderate.[15]

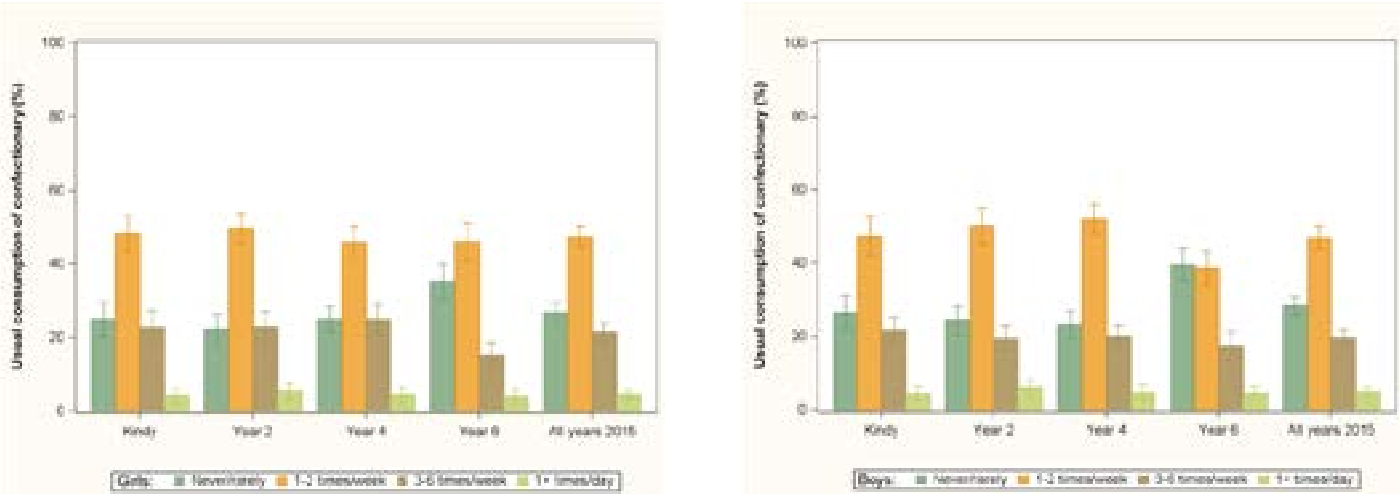
Table 5.12 and Figure 5.12 show frequency of usually eating confectionery in primary school children in 2015, and in 2010 for comparison. Overall, 28% of children usually never or rarely ate confectionery, 47% ate confectionery 1-2 times a week, 21% ate confectionery 3-6 times a week, and 5% consumed confectionery daily. The proportion of children eating confectionery daily appeared to have decreased between 2010 and 2015.

Table 5.12 Usual consumption of confectionery among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Never/rarely	25.7 (1.9)	23.3 (1.5)	24.1 (1.5)	37.4 (1.6)	27.5 (1.1)	21.8 (0.9)
1-2 times per week	47.9 (1.8)	49.9 (1.5)	48.8 (1.7)	42.3 (1.7)	47.3 (1.1)	46.8 (1.1)
3-6 times per week	22.1 (1.5)	21.2 (1.4)	22.6 (1.2)	16.2 (1.6)	20.6 (1.0)	23.2 (0.9)
Once a day or more	4.2 (0.7)	5.6 (0.8)	4.5 (0.8)	4.2 (0.7)	4.6 (0.5)	8.2 (0.8)
GIRLS						
Never/rarely	24.9 (2.3)	22.2 (2.0)	24.9 (1.7)	35.2 (2.3)	26.7 (1.4)	19.9 (1.0)
1-2 times per week	48.4 (2.4)	49.7 (2.0)	45.7 (2.2)	45.9 (2.5)	47.5 (1.4)	48.6 (1.5)
3-6 times per week	22.6 (2.4)	22.8 (2.1)	25.0 (2.0)	15.1 (1.8)	21.4 (1.3)	24.0 (1.1)
Once a day or more	4.1 (1.0)	5.3 (1.1)	4.4 (1.1)	3.9 (1.0)	4.4 (0.5)	7.5 (0.9)
BOYS						
Never/rarely	26.5 (2.3)	24.4 (1.9)	23.1 (1.9)	39.5 (2.2)	28.4 (1.3)	23.6 (1.1)
1-2 times per week	47.4 (2.7)	50.0 (2.5)	52.1 (2.0)	38.7 (2.3)	47.0 (1.5)	45.1 (1.3)
3-6 times per week	21.7 (1.8)	19.5 (1.7)	20.1 (1.4)	17.3 (2.1)	19.7 (1.1)	22.5 (1.0)
Once a day or more	4.4 (0.9)	6.0 (1.1)	4.7 (1.0)	4.5 (0.9)	4.9 (0.6)	8.8 (0.9)

Note: No significance testing was conducted.

Figure 5.12 Usual consumption of confectionery among children in primary school by sex and year group in 2015 (%, 95%CI)



CONSUMPTION OF ICE CREAMS, ICE BLOCKS

Ice cream and ice blocks are energy-dense, nutrient-poor foods. The Australian Dietary Guidelines recommend limiting these foods and describe them as 'discretionary choices'.[4] There is currently no validity information or reproducibility information available for this question.[15] It is important to note that SPANS was conducted during summer months, hence consumption of ice cream and ice blocks reported in the survey may be higher than in the cooler months.

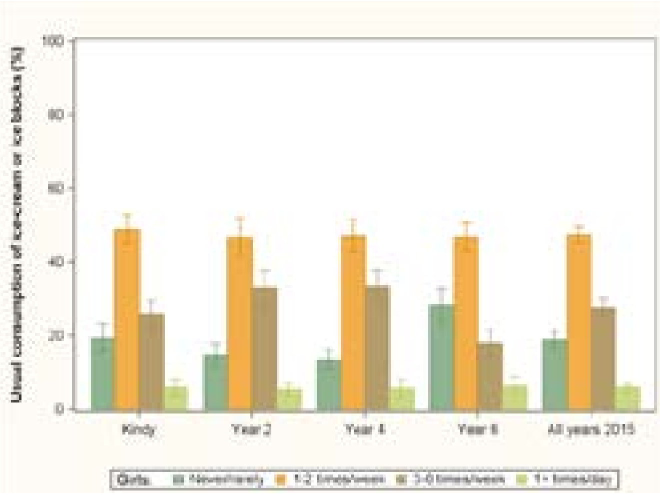
Table 5.13 and Figure 5.13 show frequency of usually eating ice cream or ice blocks in primary school children in 2015, and in 2010 for comparison. Overall, 19% of children never or rarely ate ice cream/ice blocks, 47% ate ice cream/ice blocks 1-2 times a week, 28% ate ice cream/ice blocks 3-6 times a week, and 6% ate ice cream/ice blocks daily. The proportion of children consuming ice cream/ice blocks daily appeared to have decreased between 2010 and 2015.

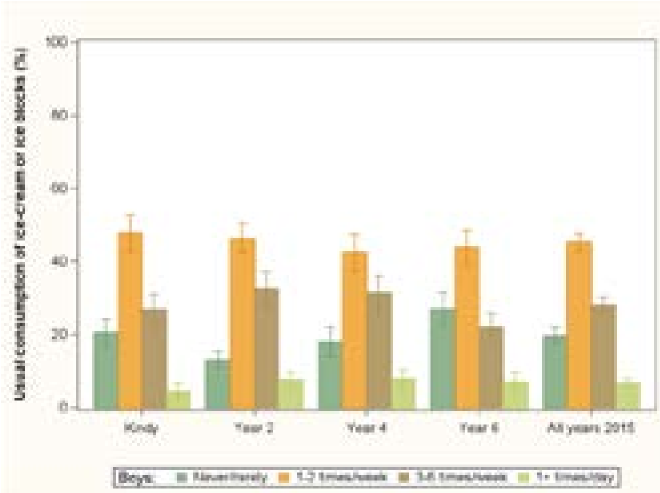
Table 5.13 Usual consumption of ice cream or ice blocks among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Never/rarely	20.0 (1.5)	14.0 (1.0)	15.8 (1.3)	27.7 (1.6)	19.4 (0.9)	14.3 (1.0)
1-2 times per week	48.4 (1.7)	46.7 (1.6)	45.0 (1.9)	45.5 (1.6)	46.5 (0.8)	42.4 (1.0)
3-6 times per week	26.3 (1.6)	32.9 (1.6)	32.5 (1.6)	20.1 (1.3)	27.9 (0.9)	33.2 (0.9)
Once a day or more	5.3 (0.7)	6.4 (0.7)	6.7 (0.8)	6.8 (1.1)	6.3 (0.5)	10.1 (0.8)
GIRLS						
Never/rarely	19.4 (1.9)	14.7 (1.6)	13.5 (1.3)	28.4 (2.3)	18.9 (1.1)	13.0 (1.1)
1-2 times per week	48.9 (2.0)	46.8 (2.6)	47.2 (2.2)	47.0 (1.8)	47.5 (1.1)	44.0 (1.4)
3-6 times per week	25.8 (1.9)	33.1 (2.3)	33.5 (2.2)	18.1 (1.8)	27.7 (1.2)	33.1 (1.2)
Once a day or more	5.9 (1.1)	5.4 (0.9)	5.7 (1.2)	6.5 (1.2)	5.9 (0.7)	9.9 (0.9)
BOYS						
Never/rarely	20.6 (1.9)	13.1 (1.1)	18.2 (1.9)	27.0 (2.3)	19.8 (1.1)	15.5 (1.2)
1-2 times per week	47.9 (2.5)	46.5 (2.0)	42.6 (2.5)	44.0 (2.3)	45.4 (1.2)	40.9 (1.2)
3-6 times per week	26.8 (2.0)	32.7 (2.3)	31.4 (2.3)	22.1 (1.9)	28.2 (1.0)	33.2 (1.1)
Once a day or more	4.7 (1.0)	7.6 (1.1)	7.8 (1.3)	7.0 (1.4)	6.7 (0.6)	10.3 (1.1)

Note: No significance testing was conducted.

Figure 5.13 Usual consumption of ice cream or ice blocks among children in primary school by sex and year group in 2015 (%, 95%CI)





BEVERAGES

There were slight differences in the beverage questions and in the response categories between 2010 and 2015 SPANS, which prevent examining change in beverage consumption between survey periods. There were also some differences between SPANS 2010 and 2015 in the type of beverages that made up a category, for example soft drinks. The beverage response categories for SPANS 2010 and 2015 are tabulated below;

Beverage response options	
2010 response categories	**2015 response categories**
	Never/rarely *(new)*
1 cup or less/week	1 cup or less/week
2-4 cups/week	2-4 cups/week
5-6 cups/week	5-6 cups/week
1 cup/day	1 cup/day
	1.5 cups per day *(new)*
2 or more cups/day	2 or more cups/day

WATER CONSUMPTION

Water is an essential part of a healthy diet especially for children. Inadequate water intake has been linked with indicators of poor health, including obesity,[16] and has been linked with reduced cognitive control and functioning in children.[17] The Australian Dietary Guidelines recommend drinking plenty of water instead of sugary drinks.[4]

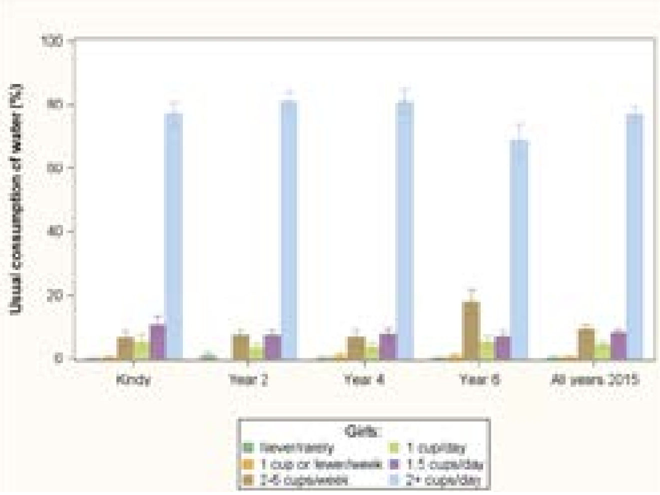
Table 5.14 and Figure 5.14 show the usual consumption of water in primary school children in 2015. Overall, 76% of children usually drank at least 2 cups of water per day. Year 6 children were less likely than children in other years to report consuming at least 2 cups daily, and boys in Year 6 were less likely than girls to drink at least 2 cups daily.

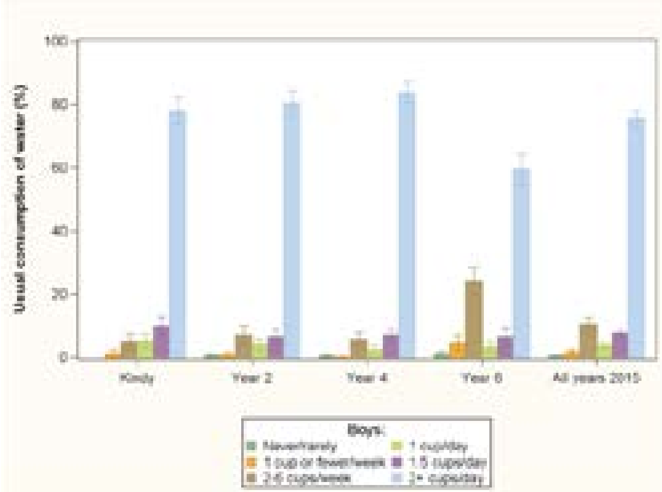
Table 5.14 Usual consumption of water among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	**Year 2**	**Year 4**	**Year 6**	**All years**
ALL					
Never/rarely	0.1 (0.1)	0.8 (0.3)	0.4 (0.2)	0.7 (0.3)	0.5 (0.1)
1 cup or fewer per week	0.8 (0.4)	0.4 (0.2)	0.5 (0.3)	2.8 (0.7)	1.1 (0.3)
2-6 cups per week	5.8 (0.9)	7.2 (1.0)	6.3 (1.0)	21.2 (1.7)	10.0 (0.8)
1 cup per day	5.3 (0.7)	3.8 (0.4)	3.1 (0.5)	4.5 (0.5)	4.2 (0.3)
1.5 cups per day	10.4 (0.9)	6.9 (0.7)	7.3 (0.7)	6.8 (1.1)	7.9 (0.5)
≥2 cups per day	77.5 (1.4)	80.8 (1.4)	82.4 (1.3)	64.1 (2.0)	76.2 (1.0)
GIRLS					
Never/rarely	0.1 (0.1)	1.0 (0.5)	0.2 (0.2)	0.2 (0.2)	0.4 (0.2)
1 cup or fewer per week	0.3 (0.3)	na	0.8 (0.5)	0.9 (0.4)	0.5 (0.2)
2-6 cups per week	6.5 (1.1)	7.3 (1.0)	6.7 (1.4)	18.0 (1.9)	9.5 (0.7)
1 cup per day	5.3 (1.1)	3.4 (0.7)	3.7 (0.7)	5.3 (0.9)	4.4 (0.5)
1.5 cups per day	10.8 (1.3)	7.3 (1.0)	7.7 (1.0)	6.9 (1.0)	8.2 (0.7)
≥2 cups per day	77.0 (1.9)	81.1 (1.5)	80.9 (1.9)	68.6 (2.6)	76.9 (1.3)
BOYS					
Never/rarely	na	0.6 (0.4)	0.5 (0.3)	1.1 (0.5)	0.5 (0.2)
1 cup or fewer per week	1.5 (0.7)	0.9 (0.5)	0.1 (0.1)	4.7 (1.1)	1.8 (0.4)
2-6 cups per week	5.1 (1.2)	7.1 (1.5)	5.8 (1.1)	24.4 (2.1)	10.6 (1.0)
1 cup per day	5.3 (1.1)	4.3 (0.8)	2.6 (0.8)	3.6 (0.8)	4.0 (0.5)
1.5 cups per day	10.0 (1.4)	6.5 (1.2)	7.0 (1.1)	6.6 (1.4)	7.6 (0.6)
≥2 cups per day	78.1 (2.1)	80.5 (2.0)	84.0 (1.6)	59.6 (2.4)	75.5

Note: No significance testing was conducted
na *Indicates very low numbers.*

Figure 5.14 Usual consumption of water among children in primary school by sex and year group in 2015 (%, 95%CI)





MILK CONSUMPTION

Milk is an important source of calcium, protein, riboflavin, vitamin B12 and zinc, which are vital nutrients for growth and development during childhood and adolescence. The Australian Dietary Guidelines for dairy vary according to age and sex and recommend that children age 4-11 years (corresponding to Years K to 6) consume between one and a half and three serves of reduced fat dairy foods (these include milk, yoghurt, cheese and alternatives) per day.[4] One serve of milk is equal to one cup or 250ml. Validation studies show that the question on milk consumption used in SPANS tends to overestimate the actual amount of milk consumed, especially for the highest response category, but is able to distinguish between low and high consumers of milk.[5]

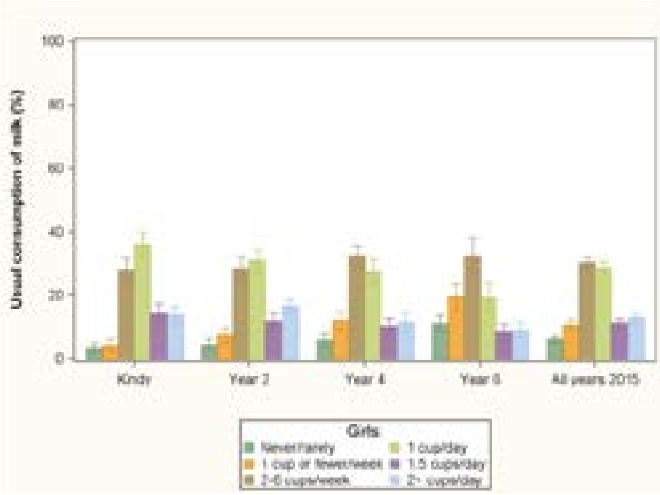
Table 5.15 and Figure 5.15 show the usual consumption of milk among primary school children in 2015. Approximately 6% of children never or rarely drank milk and 28% drank one cup per day. Milk consumption was less frequent among Year 6 children when compared to other year groups. The frequency of drinking milk appeared to be broadly consistent across all other primary year groups and girls appear to drink milk less frequently than boys.

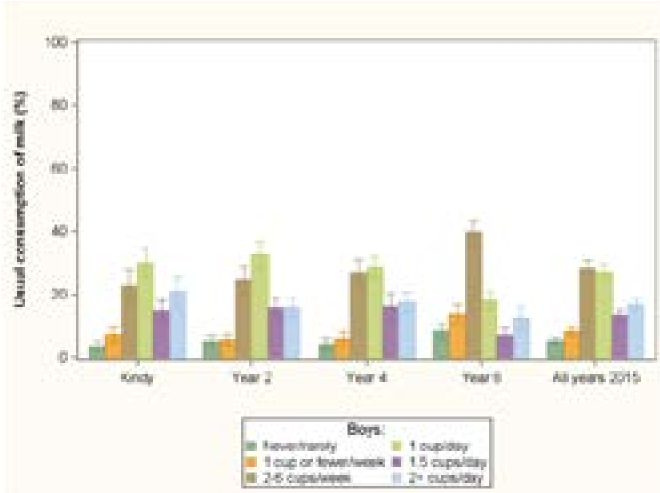
Table 5.15 Usual consumption of milk among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Never/rarely	3.6 (0.5)	4.8 (0.6)	5.1 (0.6)	9.7 (1.0)	5.8 (0.4)
1 cup or fewer per week	5.9 (0.9)	6.7 (0.7)	9.2 (0.8)	16.7 (1.1)	9.5 (0.5)
2-6 cups per week	25.5 (1.7)	26.6 (1.2)	29.8 (1.5)	36.1 (2.1)	29.4 (0.8)
1 cup per day	32.9 (1.6)	31.7 (1.2)	28.2 (1.2)	18.7 (1.4)	28.0 (0.9)
1.5 cups per day	14.7 (1.2)	13.8 (0.9)	13.2 (1.0)	7.8 (1.0)	12.4 (0.6)
≥2 cups per day	17.4 (1.4)	16.3 (0.8)	14.5 (1.0)	11.0 (0.9)	14.9 (0.6)
GIRLS					
Never/rarely	3.5 (0.7)	4.5 (0.9)	5.9 (1.0)	11.1 (1.3)	6.2 (0.5)
1 cup or fewer per week	4.4 (1.0)	7.5 (1.1)	12.1 (1.3)	19.6 (2.0)	10.7 (0.7)
2-6 cups per week	28.2 (1.8)	28.4 (1.9)	32.5 (1.6)	32.4 (3.0)	30.3 (0.9)
1 cup per day	35.9 (2.1)	30.9 (1.7)	27.6 (1.9)	19.3 (2.3)	28.6 (1.0)
1.5 cups per day	14.3 (1.6)	11.9 (1.3)	10.3 (1.2)	8.4 (1.3)	11.3 (0.7)
≥2 cups per day	13.8 (1.4)	16.7 (1.1)	11.7 (1.5)	9.3 (1.1)	12.9 (0.7)
BOYS					
Never/rarely	3.7 (0.8)	5.2 (1.0)	4.4 (0.9)	8.4 (1.1)	5.4 (0.5)
1 cup or fewer per week	7.4 (1.2)	5.7 (0.8)	6.1 (1.1)	13.9 (1.5)	8.3 (0.7)
2-6 cups per week	22.9 (2.5)	24.7 (2.1)	27.0 (2.1)	39.8 (1.9)	28.5 (1.1)
1 cup per day	30.0 (2.3)	32.7 (2.1)	28.7 (1.7)	18.1 (1.4)	27.4 (1.1)
1.5 cups per day	15.0 (1.6)	15.7 (1.6)	16.3 (2.0)	7.2 (1.2)	13.5 (0.9)
≥2 cups per day	21.0 (2.2)	15.9 (1.4)	17.6 (1.6)	12.7 (1.8)	16.9 (0.9)

Note: No significance testing was conducted

Figure 5.15 Usual consumption of milk among children in primary school by sex and year group in 2015 (%, 95%CI)





TYPE OF MILK CONSUMED

The Australian Dietary Guidelines encourage the consumption of reduced-fat rather than full-fat dairy foods and recommend that children over the age of 2 years drink reduced-fat milk options, preferably plain milk.[4]

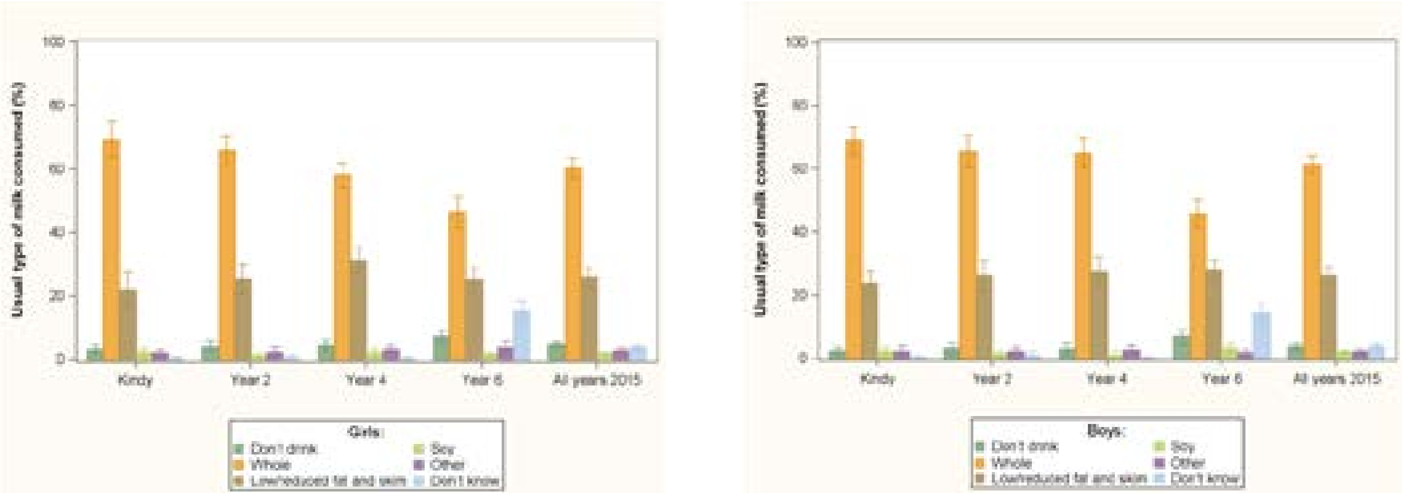
Table 5.16 and Figure 5.16 show the proportion of primary school children consuming whole, low-fat, reduced-fat or skim milk, or other types of milk in 2015, and in 2010 for comparison. Overall, 4% of children do not drink milk. The majority of children (61%) consumed whole milk and 26% consumed reduced-/low-fat or skim milk. Approximately 5% consumed soy or other types of milk. Generally, girls and boys had a similar profile of milk consumption, with the majority consuming whole milk. Interestingly, 15% of Year 6 children did not know what type of milk they drank. Overall, it appeared that there were no differences in the type of milk consumed by children, between 2010 and 2015.

Table 5.16 Usual type of milk consumed among children in primary school by sex and year group in 2015 (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Don't drink	2.9 (0.5)	3.8 (0.6)	3.9 (0.5)	7.1 (0.7)	4.4 (0.4)	4.8 (0.4)
Whole	69.1 (2.1)	65.8 (1.9)	61.5 (1.7)	46.1 (1.9)	60.9 (1.4)	61.9 (1.3)
Low/reduced- fat/skim	23.0 (1.9)	25.9 (2.0)	29.5 (1.8)	26.7 (1.3)	26.2 (1.3)	24.5 (1.4)
Soy	2.4 (0.5)	1.3 (0.3)	1.7 (0.5)	2.4 (0.4)	2.0 (0.3)	2.8 (0.3)
Other	2.2 (0.5)	2.5 (0.4)	3.1 (0.5)	2.9 (0.5)	2.7 (0.3)	1.9 (0.2)
Don't know	0.4 (0.2)	0.8 (0.5)	0.3 (0.2)	14.8 (1.2)	4.0 (0.3)	4.2 (0.4)
GIRLS						
Don't drink	3.4 (0.7)	4.2 (0.9)	4.6 (0.8)	7.4 (1.0)	4.9 (0.4)	5.8 (0.6)
Whole	69.4 (2.9)	65.9 (2.3)	58.2 (2.0)	46.4 (2.5)	60.3 (1.6)	60.3 (1.4)
Low/reduced- fat/skim	22.3 (2.6)	25.5 (2.4)	31.3 (2.0)	25.2 (1.9)	26.0 (1.5)	25.0 (1.6)
Soy	2.5 (0.7)	1.2 (0.4)	2.2 (0.8)	1.6 (0.5)	1.9 (0.3)	2.9 (0.4)
Other	2.1 (0.6)	2.6 (0.8)	3.4 (0.6)	4.0 (0.9)	3.0 (0.4)	1.9 (0.3)
Don't know	0.4 (0.3)	0.5 (0.4)	0.3 (0.2)	15.3 (1.6)	4.0 (0.4)	4.0 (0.5)
BOYS						
Don't drink	2.5 (0.6)	3.3 (0.9)	3.1 (0.9)	6.8 (1.1)	3.9 (0.5)	3.8 (0.4)
Whole	68.9 (2.2)	65.6 (2.6)	65.0 (2.2)	45.7 (2.2)	61.5 (1.4)	63.3 (1.6)
Low/reduced- fat/skim	23.7 (2.0)	26.3 (2.3)	27.7 (2.2)	28.1 (1.5)	26.4 (1.3)	24.0 (1.6)
Soy	2.3 (0.7)	1.4 (0.4)	1.2 (0.6)	3.2 (0.7)	2.1 (0.3)	2.7 (0.3)
Other	2.3 (0.8)	2.3 (0.7)	2.8 (0.7)	1.8 (0.5)	2.3 (0.4)	1.8 (0.4)
Don't know	0.4 (0.3)	1.1 (0.6)	0.2 (0.2)	14.3 (1.6)	3.9 (0.4)	4.5 (0.5)

Note: No significance testing was conducted.

Figure 5.16 Usual type of milk consumed among children in primary school by sex and year group in 2015 (%, 95%CI)



CONSUMPTION OF FLAVOURED WATER

Flavoured waters are marketed to children and their parents as a healthy alternative to other carbonated and sweetened beverages.[18] In contrast to tap water, bottled flavoured water frequently includes citric and other fruit-derived acids that contribute to dental erosion.[19] Indeed, health professionals advocate flavoured sparkling water drinks should be regarded as potentially erosive, and preventive advice on their consumption should recognise them as acidic drinks, rather than water with flavouring.[19] The Australian Dietary Guidelines do not encourage the consumption of flavoured waters in children and categorise flavoured water as a sugary drink.[4]

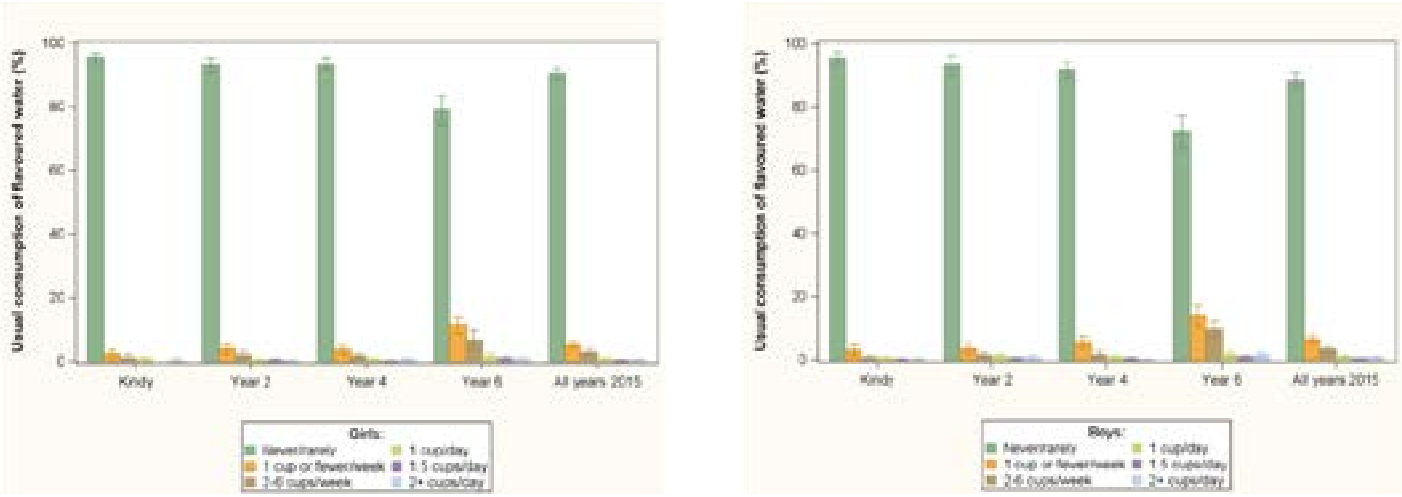
Table 5.17 and Figure 5.17 show the usual consumption of flavoured water among primary school children in 2015. Overall, 2% of children drank one cup or more per day of flavoured water and almost 90% never or rarely drank flavoured water. There was a higher proportion of Year 6 children consuming at least once cup of flavoured water per week (24%) compared to younger aged children (<8%). The frequency of drinking flavoured water appeared to be broadly consistent across year groups.

Table 5.17 Usual consumption of flavoured water among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Never/rarely	95.5 (0.7)	93.1 (1.1)	92.6 (0.9)	75.7 (1.8)	89.5 (0.8)
1 cup or fewer per week	2.7 (0.6)	3.8 (0.7)	4.7 (0.6)	12.7 (1.0)	5.8 (0.4)
2-6 cups per week	0.9 (0.3)	1.7 (0.5)	1.6 (0.4)	8.2 (1.0)	3.0 (0.4)
1 cup per day	0.5 (0.2)	0.7 (0.2)	0.5 (0.2)	1.6 (0.4)	0.8 (0.2)
1.5 cups per day	0.1 (0.1)	0.3 (0.2)	0.2 (0.1)	0.8 (0.3)	0.3 (0.1)
≥2 cups per day	0.3 (0.2)	0.4 (0.2)	0.4 (0.2)	1.1 (0.3)	0.5 (0.1)
GIRLS					
Never/rarely	95.5 (0.7)	93.1 (1.1)	93.5 (1.0)	79.1 (2.2)	90.5 (0.8)
1 cup or fewer per week	2.3 (0.6)	4.0 (0.9)	3.7 (0.7)	11.4 (1.3)	5.2 (0.5)
2-6 cups per week	1.2 (0.5)	2.0 (0.7)	1.6 (0.4)	6.7 (1.6)	2.8 (0.5)
1 cup per day	0.7 (0.3)	0.4 (0.2)	0.5 (0.3)	1.4 (0.6)	0.7 (0.2)
1.5 cups per day	na	0.3 (0.2)	0.1 (0.1)	0.8 (0.4)	0.3 (0.1)
≥2 cups per day	0.4 (0.4)	0.2 (0.1)	0.6 (0.3)	0.7 (0.3)	0.5 (0.1)
BOYS					
Never/rarely	95.5 (1.0)	93.1 (1.6)	91.7 (1.3)	72.2 (2.6)	88.4 (1.1)
1 cup or fewer per week	3.1 (0.9)	3.6 (0.8)	5.7 (1.0)	13.9 (1.8)	6.5 (0.7)
2-6 cups per week	0.7 (0.3)	1.4 (0.5)	1.7 (0.6)	9.8 (1.2)	3.3 (0.4)
1 cup per day	0.3 (0.2)	1.1 (0.4)	0.6 (0.3)	1.7 (0.5)	0.9 (0.2)
1.5 cups per day	0.1 (0.1)	0.3 (0.3)	0.3 (0.2)	0.8 (0.3)	0.3 (0.1)
≥2 cups per day	0.2 (0.2)	0.6 (0.4)	0.1 (0.1)	1.6 (0.5)	0.6 (0.2)

Note: No significance testing was conducted

Figure 5.17 Usual consumption of flavoured water among children in primary school by sex and year group in 2015 (%, 95%CI)



FRUIT JUICE CONSUMPTION

The Australian Dietary Guidelines recommend limiting fruit juice consumption in children.[4] Fruit juice is a source of glucose and sucrose, and high consumption of these sugars without the corresponding fibre that is present in whole fruit, but not the juice, is associated with the metabolic syndrome, liver injury and obesity.[20] There is accumulating evidence that high fruit juice consumption is associated with increased risk of obesity even among young children.[21]

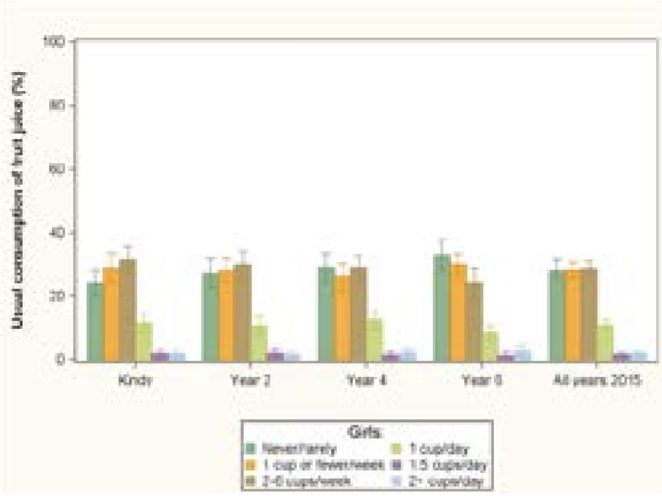
Table 5.18 and Figure 5.18 show the usual consumption of fruit juice among primary school children in 2015. Overall, 29% of children never or rarely consumed fruit juice and 27% usually drank one cup or less a week. Almost one in six (16%) of children usually drank one cup or more per day.

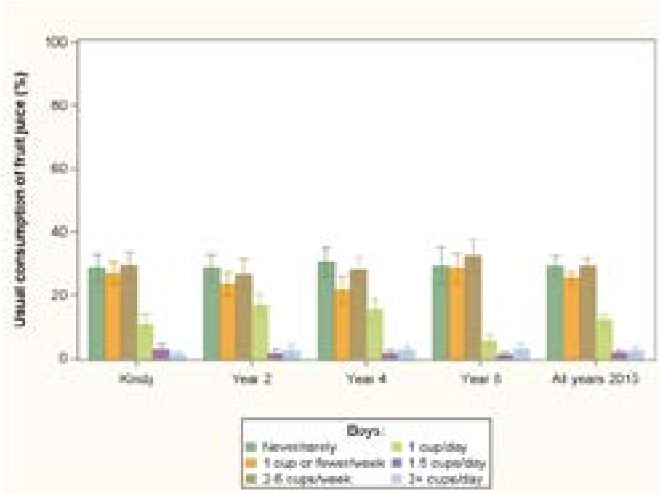
Table 5.18 Usual consumption of fruit juice among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Never/rarely	26.4 (1.7)	27.9 (1.7)	29.7 (1.8)	31.2 (1.9)	28.8 (1.4)
1 cup or fewer per week	28.0 (1.5)	26.0 (1.3)	23.9 (1.7)	29.3 (1.4)	26.8 (0.8)
2-6 cups per week	30.5 (1.4)	28.5 (1.4)	28.6 (1.6)	28.3 (1.8)	29.0 (1.0)
1 cup per day	11.3 (1.1)	13.6 (1.2)	13.9 (1.0)	7.0 (0.7)	11.5 (0.7)
1.5 cups per day	2.3 (0.5)	1.9 (0.5)	1.5 (0.4)	1.2 (0.4)	1.7 (0.2)
≥2 cups per day	1.6 (0.5)	2.0 (0.6)	2.4 (0.5)	2.9 (0.7)	2.2 (0.4)
GIRLS					
Never/rarely	24.1 (2.0)	27.3 (2.2)	29.0 (2.3)	33.1 (2.4)	28.2 (1.6)
1 cup or fewer per week	28.9 (2.3)	28.1 (1.8)	26.0 (2.1)	30.0 (1.7)	28.3 (1.2)
2-6 cups per week	31.5 (2.1)	30.1 (2.1)	29.0 (2.0)	24.3 (2.3)	28.8 (1.2)
1 cup per day	11.6 (1.5)	10.7 (1.6)	12.5 (1.3)	8.4 (1.2)	10.8 (0.8)
1.5 cups per day	1.9 (0.7)	2.1 (0.8)	1.4 (0.6)	1.3 (0.6)	1.7 (0.3)
≥2 cups per day	1.9 (0.6)	1.6 (0.6)	2.2 (0.8)	2.9 (0.9)	2.1 (0.5)
BOYS					
Never/rarely	28.8 (2.1)	28.7 (2.2)	30.4 (2.3)	29.3 (2.9)	29.3 (1.6)
1 cup or fewer per week	27.0 (1.7)	23.6 (1.8)	21.8 (2.1)	28.6 (2.3)	25.3 (1.0)
2-6 cups per week	29.4 (2.1)	26.7 (2.2)	28.1 (2.0)	32.5 (2.5)	29.2 (1.3)
1 cup per day	10.9 (1.6)	16.8 (1.7)	15.4 (1.7)	5.6 (0.9)	12.1 (0.9)
1.5 cups per day	2.7 (0.8)	1.7 (0.6)	1.7 (0.5)	1.1 (0.4)	1.8 (0.3)
≥2 cups per day	1.3 (0.5)	2.5 (0.9)	2.6 (0.7)	2.9 (0.8)	2.3 (0.5)

Note: No significance testing was conducted

Figure 5.18 Usual consumption of fruit juice among children in primary school by sex and year group in 2015 (%, 95%CI)





SOFT DRINK CONSUMPTION

The Australian Dietary Guidelines discourage consumption of soft drinks (i.e., carbonated, sugar-sweetened beverages) in children.[4] Soft drinks or carbonated, sugar-sweetened beverages have been shown to be a major contributor to sugar and energy consumption in children's diets.[22] There are clear links between soft drink consumption and increased body weight[23, 24] and dental decay.[25]

Differences in soft drink consumption between 2010 and 2015 were not assessed because of changes to the question response categories and the types of drinks that were included in the category. In 2010, sports drinks were categorised under soft drinks; in 2015 they were in a separate category. Consumption of cordial was included together with carbonated sugar-sweetened beverages. Consumption of diet soft drinks and diet cordials was measured using a separate survey item.

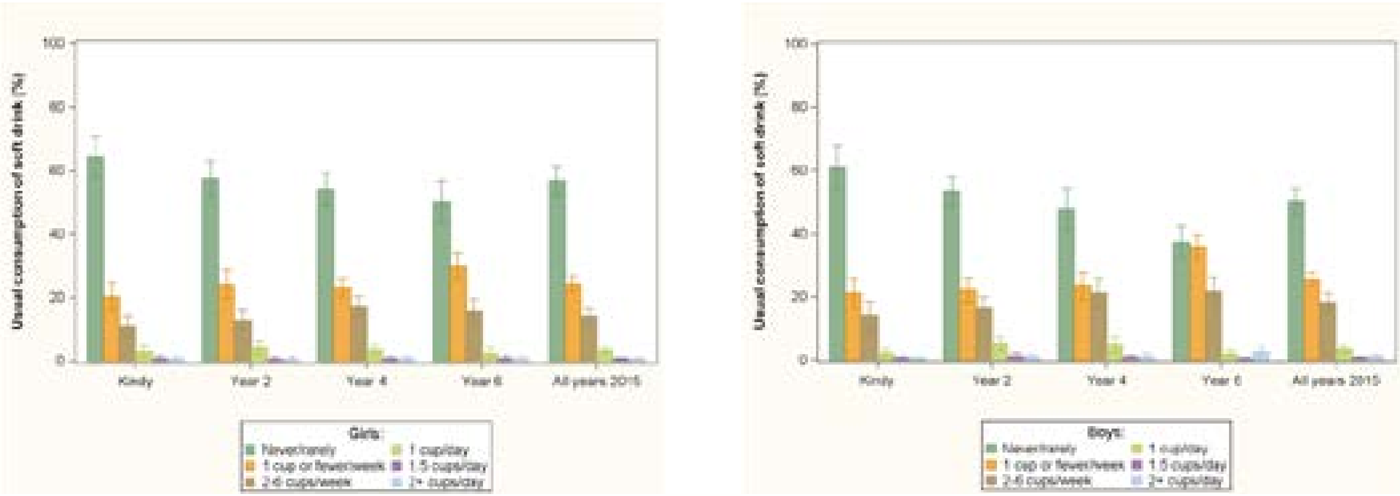
Table 5.19 and Figure 5.19 show the usual consumption of soft drink (including cordial) consumption among primary school children in 2015. Overall, 5% of children usually consumed one or more cups of soft drink per day; 16% usually consumed two to six cups per week; 25% consumed one cup or less per week; and 54% never or rarely consumed soft drinks. The consumption of soft drinks appeared to be broadly consistent across all primary year groups.

Table 5.19 Usual consumption of soft drinks and cordial among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Never/rarely	62.7 (2.7)	55.5 (2.2)	51.2 (2.6)	43.7 (2.5)	53.6 (2.0)
1 cup or fewer per week	20.8 (1.6)	23.3 (1.6)	23.3 (1.3)	32.9 (1.1)	24.9 (0.7)
2-6 cups per week	12.6 (1.5)	14.8 (1.2)	19.3 (1.6)	18.7 (1.9)	16.2 (1.2)
1 cup per day	2.7 (0.6)	4.7 (0.9)	4.2 (0.7)	2.4 (0.5)	3.5 (0.4)
1.5 cups per day	0.8 (0.3)	1.0 (0.3)	0.9 (0.2)	0.6 (0.2)	0.8 (0.2)
≥2 cups per day	0.5 (0.3)	0.8 (0.3)	1.1 (0.4)	1.7 (0.5)	1.0 (0.2)
GIRLS					
Never/rarely	64.3 (3.1)	57.4 (2.8)	54.3 (2.6)	50.2 (3.3)	56.8 (2.3)
1 cup or fewer per week	20.3 (2.2)	24.2 (2.2)	23.1 (1.4)	30.0 (2.0)	24.3 (1.2)
2-6 cups per week	11.0 (1.7)	12.9 (1.6)	17.4 (1.5)	15.7 (1.9)	14.2 (1.2)
1 cup per day	3.0 (0.9)	4.2 (1.1)	3.5 (0.8)	2.5 (0.8)	3.3 (0.5)
1.5 cups per day	0.8 (0.4)	0.7 (0.3)	0.8 (0.3)	0.9 (0.4)	0.8 (0.2)
≥2 cups per day	0.6 (0.3)	0.6 (0.4)	0.9 (0.4)	0.7 (0.4)	0.7 (0.2)
BOYS					
Never/rarely	61.0 (3.3)	53.4 (2.3)	47.9 (3.3)	37.1 (2.7)	50.3 (2.1)
1 cup or fewer per week	21.3 (2.3)	22.3 (1.9)	23.5 (2.1)	35.8 (2.0)	25.6 (1.1)
2-6 cups per week	14.1 (2.2)	16.8 (1.6)	21.3 (2.2)	21.8 (2.3)	18.3 (1.5)
1 cup per day	2.4 (0.8)	5.2 (1.0)	4.9 (1.1)	2.3 (0.6)	3.7 (0.5)
1.5 cups per day	0.7 (0.3)	1.4 (0.6)	1.0 (0.4)	0.3 (0.2)	0.9 (0.2)
≥2 cups per day	0.5 (0.3)	1.0 (0.5)	1.3 (0.6)	2.7 (0.8)	1.3 (0.3)

Note: No significance testing was conducted

Figure 5.19 Usual consumption of soft drinks and cordial among children in primary school by sex and year group in 2015 (%, 95%CI)



SOFT DRINKS – MORE THAN ONE CUP A DAY

Although there is no consensus on the dose of soft drink consumption that may cause ill-health, there is accumulating evidence that consumption of more than one cup of sugar-sweetened beverages per day may be associated with adverse health effects, including weight gain and dental caries.[26]

Table 5.20 and Figure 5.20 show the proportion of primary school children who reported that they usually consumed more than one cup of soft drink daily in 2015. Overall, 5% of children consumed one or more cups of soft drink daily.

Figure 5.20 Prevalence of consuming one or more cups of soft drink daily among children in primary school by sex and year group in 2015 (%, 95%CI)

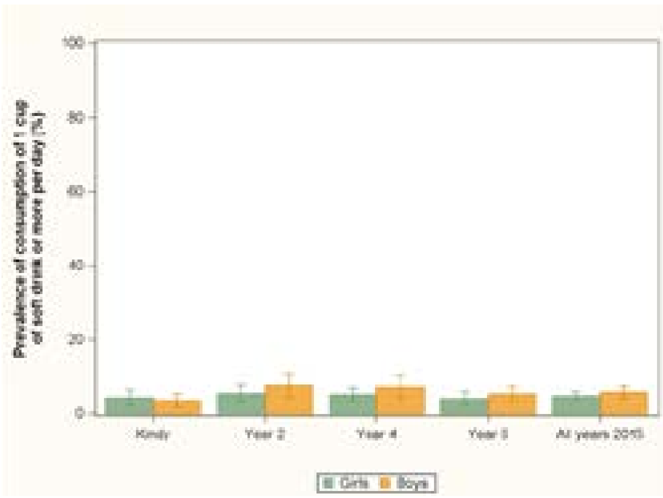


Table 5.20 Prevalence of consuming one or more cups of soft drink daily among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	**Year 2**	**Year 4**	**Year 6**	**All years**
ALL					
< 1 cup daily	96.0 (0.8)	93.5 (1.1)	93.8 (0.9)	95.3 (0.8)	94.7 (0.6)
≥ 1 cup daily	4.0 (0.8)	6.5 (1.1)	6.2 (0.9)	4.7 (0.8)	5.3 (0.6)
GIRLS					
< 1 cup daily	95.6 (1.1)	94.5 (1.2)	94.8 (1.0)	95.9 (1.0)	95.2 (0.6)
≥ 1 cup daily	4.4 (1.1)	5.5 (1.2)	5.2 (1.0)	4.1 (1.0)	4.8 (0.6)
BOYS					
< 1 cup daily	96.4 (1.0)	92.4 (1.5)	92.8 (1.6)	94.6 (1.0)	94.1 (0.8)
≥ 1 cup daily	3.6 (1.0)	7.6 (1.5)	7.2 (1.6)	5.4 (1.0)	5.9 (0.8)

a *Indicates statistically significant difference at P < 0.05. Comparisons are between boys and girls within each year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately one in 20 (5%) children consume one or more cups of soft drink daily. Table 5.21 and Figure 5.21 show the proportion of children who reported that they usually consumed one or more cups of soft drink daily by socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no consistent differences in consuming one or more cups of soft drink daily among children from urban and rural areas.

Socio-economic status

2015: Overall, the prevalence of consuming one or more cups of soft drink daily was significantly higher among children from low SES backgrounds (9%), compared with children from high SES backgrounds (4%). The prevalence was significantly higher among girls from low SES (9%) and middle SES (5%) backgrounds, compared with girls from high SES backgrounds (3%); and among boys from low SES (9%), compared with boys from high SES backgrounds (4%).

Cultural background

2015: Overall, the prevalence of consuming one or more cups of soft drink daily was significantly higher among children from Middle Eastern cultural backgrounds (11%), compared with children from English-speaking backgrounds (5%). The prevalence was significantly higher among girls from Middle Eastern cultural backgrounds (10%), compared with girls from English-speaking backgrounds (5%); and among boys from Middle Eastern cultural backgrounds (12%), compared with boys from English-speaking backgrounds (6%).

Weight status

2015: Overall, the prevalence of consuming one or more cups of soft drink daily was significantly higher among children in the obese BMI category (12%), compared with children in the healthy weight BMI category (5%). The prevalence was significantly higher among girls in the overweight (7%) and obese (10%) BMI categories, compared with girls in the healthy weight BMI category (4%); and among boys in the obese (13%) BMI category, compared with boys in the healthy weight BMI category (5%).

Table 5.21 Prevalence of consuming one or more cups of soft drink daily among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015				
	Year K	**Year 2**	**Year 4**	**Year 6**	**All years**
ALL					
Locality					
Urban (ref)	3.2 (0.8)	6.7 (1.4)	6.7 (1.2)	5.0 (0.9)	5.4 (0.7)
Rural	7.0 (2.5)	5.4 (1.6)	4.5 (1.1)	3.7 (1.5)	5.1 (1.2)
SES					
Low	**7.2 (2.6) a**	**10.9 (2.7) a**	**9.1 (2.4) a**	**8.5 (1.8) a**	**8.9 (1.1) a**
Middle	3.6 (0.9)	**8.3 (1.9) a**	6.7 (1.5)	3.6 (1.1)	5.5 (1.0)
High (ref)	2.9 (1.0)	3.2 (1.0)	4.3 (1.3)	3.7 (0.9)	3.5 (0.8)
Cultural background					
English (ref)	4.1 (0.9)	6.5 (1.2)	5.7 (0.8)	4.5 (0.7)	5.2 (0.6)
European	na	3.3 (3.1)	na	10.0 (6.3)	3.6 (1.7)
Middle Eastern	8.3 (3.4)	10.9 (3.3)	**18.4 (7.5) a**	5.8 (4.0)	**11.0 (1.8) a**
Asian	2.2 (1.4)	2.8 (1.7)	4.7 (2.3)	4.1 (2.3)	3.2 (1.0)
BMI category					
Thin	1.1 (1.1)	10.2 (5.4)	5.8 (2.4)	6.0 (2.9)	5.6 (1.6)
Healthy weight (ref)	3.9 (0.8)	5.3 (0.8)	5.6 (1.0)	3.7 (0.8)	4.6 (0.6)
Overweight	2.6 (1.4)	6.9 (2.3)	7.0 (1.6)	6.9 (1.9)	6.1 (1.0)
Obese	**14.1 (4.0) a**	**14.2 (6.2) a**	**11.1 (2.9) a**	6.7 (3.2)	**11.6 (2.3) a**

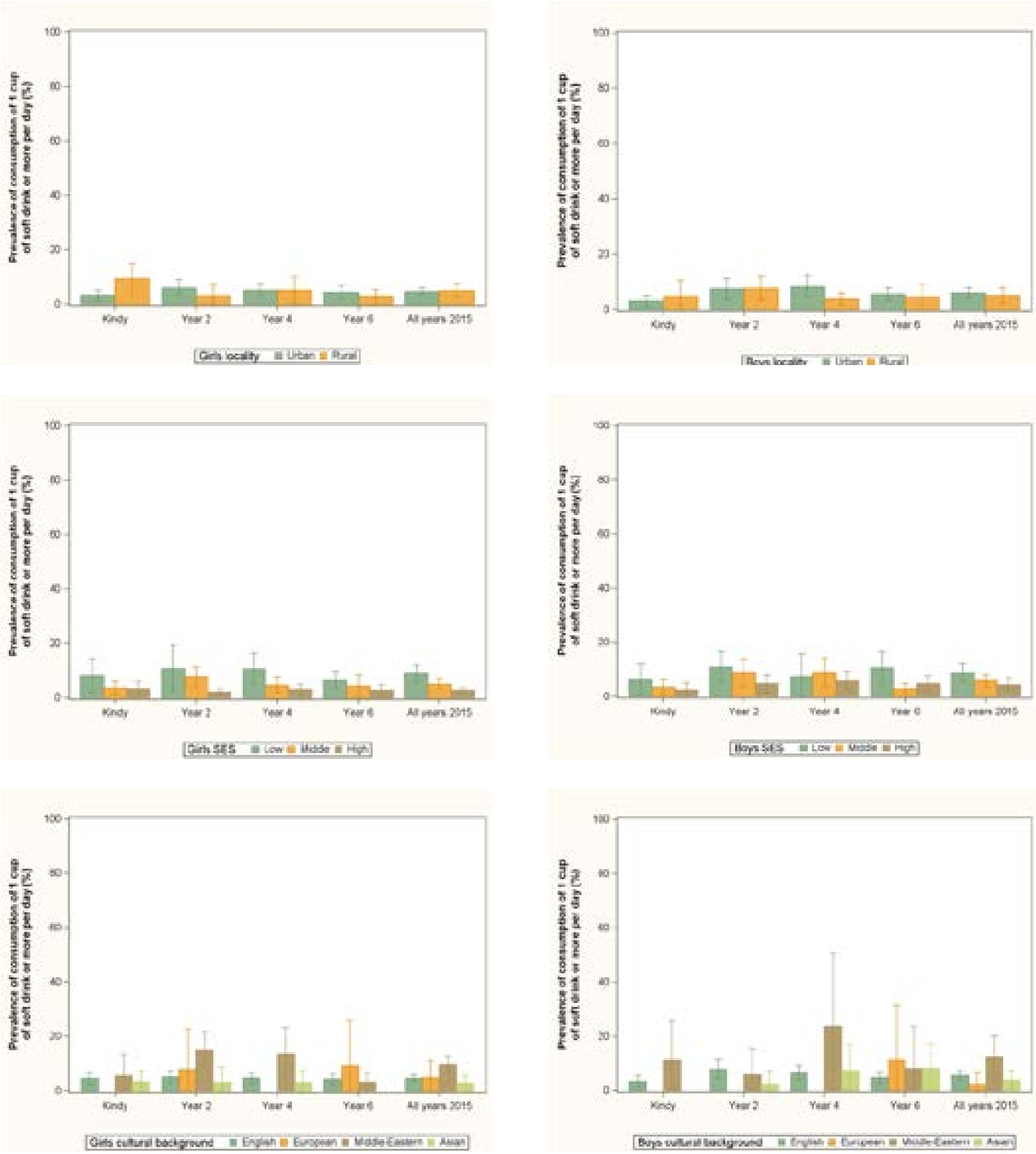
	2015				
	Year K	Year 2	Year 4	Year 6	All years
GIRLS					
Locality					
Urban (ref)	3.2 (1.0)	6.0 (1.4)	5.2 (1.1)	4.4 (1.2)	4.7 (0.8)
Rural	**9.3 (2.8) a**	2.9 (2.2)	5.2 (2.4)	2.8 (1.4)	5.1 (1.2)
SES					
Low	8.1 (3.1)	**10.8 (4.3) a**	**10.7 (2.8) a**	**6.4 (1.5) a**	**8.9 (1.6) a**
Middle	3.7 (1.2)	**7.7 (1.9) a**	4.7 (1.4)	4.4 (2.0)	**5.1 (0.9) a**
High (ref)	3.2 (1.4)	1.9 (0.7)	2.9 (1.1)	2.6 (1.1)	2.6 (0.6)
Cultural background					
English (ref)	4.6 (1.2)	5.1 (1.2)	4.7 (1.0)	4.2 (1.1)	4.6 (0.6)
European	na	8.0 (7.3)	na	9.3 (8.2)	4.8 (3.1)
Middle Eastern	5.5 (3.8)	**15.1 (3.3) a**	**13.5 (4.8) a**	3.2 (1.7)	**9.7 (1.4) a**
Asian	3.3 (2.1)	3.1 (2.8)	3.1 (2.2)	na	2.7 (1.4)
BMI category					
Thin	na	7.4 (4.3)	5.2 (3.1)	4.3 (3.0)	4.3 (1.7)
Healthy weight (ref)	4.3 (1.1)	3.8 (0.9)	4.0 (1.2)	3.4 (1.0)	3.9 (0.5)
Overweight	4.6 (2.6)	8.4 (3.4)	6.1 (2.1)	**7.6 (2.8) a**	**6.8 (1.6) a**
Obese	**11.8 (5.4) a**	12.0 (7.6)	**13.3 (4.0) a**	1.8 (1.6)	**10.0 (3.1) a**
BOYS					
Locality					
Urban (ref)	3.2 (1.0)	7.5 (1.9)	8.3 (2.0)	5.6 (1.1)	6.1 (1.0)
Rural	4.9 (2.8)	7.7 (2.1)	**3.8 (1.1) a**	4.6 (2.3)	5.2 (1.4)
SES					
Low	6.2 (2.8)	**10.9 (2.8) a**	7.5 (4.2)	**10.6 (2.9) a**	**8.8 (1.6) a**
Middle	3.4 (1.4)	8.9 (2.5)	8.9 (2.7)	2.9 (0.9)	5.9 (1.2)
High (ref)	2.5 (1.3)	4.8 (1.7)	5.8 (1.7)	4.8 (1.4)	4.3 (1.1)
Cultural background					
English (ref)	3.5 (1.1)	8.0 (1.7)	6.6 (1.3)	4.8 (1.0)	5.7 (0.9)
European	na	na	na	11.2 (10.1)	2.3 (2.1)
Middle Eastern	11.2 (7.3)	5.9 (4.7)	**23.8 (13.3) a**	8.3 (7.7)	**12.4 (3.9) a**
Asian	na	2.4 (2.3)	7.0 (4.9)	8.2 (4.5)	3.9 (1.7)
BMI category					
Thin	2.3 (2.2)	13.6 (9.0)	6.4 (3.7)	9.2 (6.4)	7.4 (2.7)
Healthy weight (ref)	3.4 (1.1)	6.8 (1.2)	7.3 (1.7)	4.1 (1.2)	5.3 (0.8)
Overweight	na	5.1 (2.1)	7.9 (2.6)	6.4 (2.1)	5.5 (1.0)
Obese	**16.7 (6.5) a**	16.6 (10.8)	8.8 (5.4)	11.8 (5.7)	**13.3 (3.3) a**

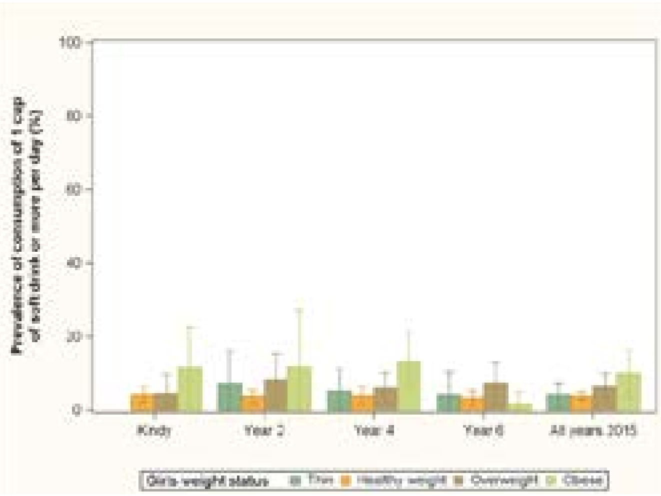
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

na *Indicates statistical significance could not be calculated due to low numbers.*

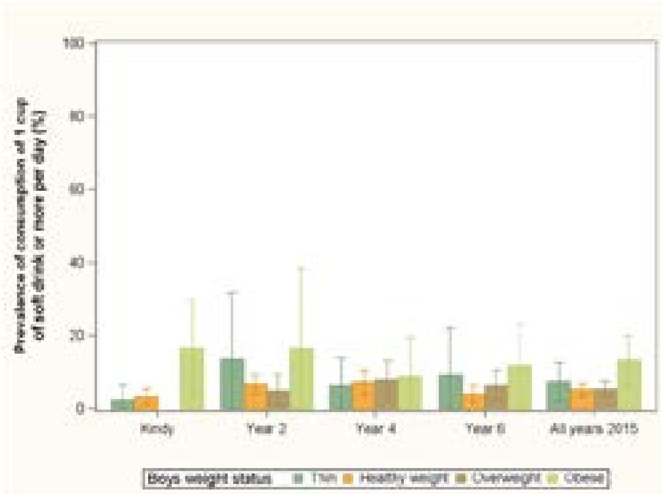
No letter means there was no statistical difference.

Figure 5.21 Prevalence of consuming one or more cups of soft drink daily among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)





Prevalence of consumption of 1 cup of soft drink or more per day (%)
100
80
60
40
20
0
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese



Prevalence of consumption of 1 cup of soft drink or more per day (%)
100
80
60
40
20
0
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

DIET SOFT DRINK CONSUMPTION

Diet soft drinks or diet cordials are artificially-sweetened drinks that, apart from fluid, provide no nutritional value. Artificially-sweetened soft drinks are a lower kilojoule alternative to regular soft drinks but overconsumption can lead to dental erosion and bone demineralisation, and may potentially lead to children developing a taste for sweet foods and drinks.[27,28]

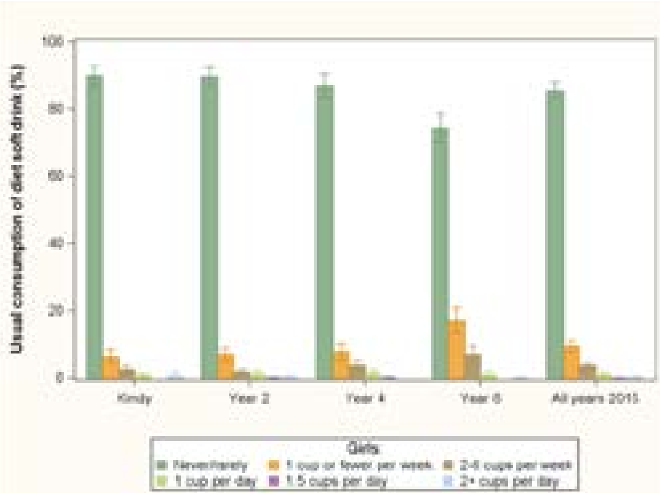
Table 5.22 and Figure 5.22 show the frequency of diet soft drink consumption among primary school children in 2015. Overall, 84% of children never or rarely consumed diet soft drinks.

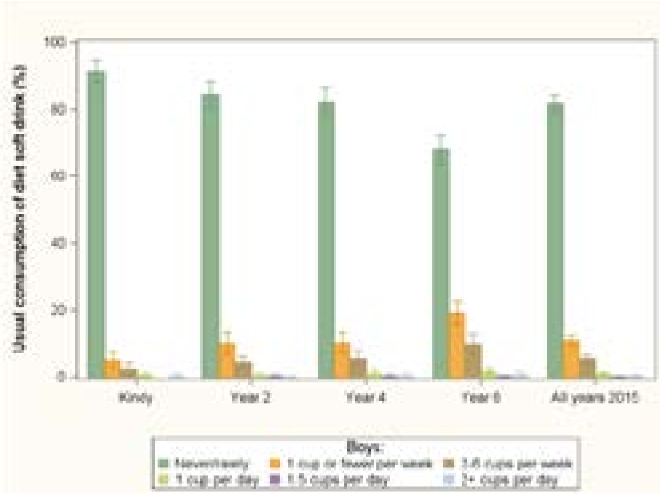
Table 5.22 Usual consumption of diet soft drinks among children in primary school in 2015 (%, SE)

	2015				
	Year K	**Year 2**	**Year 4**	**Year 6**	**All years**
ALL					
Never/rarely	90.7 (1.1)	87.2 (1.4)	84.7 (1.6)	71.3 (1.9)	83.8 (1.1)
1 cup or fewer per week	5.7 (0.8)	8.5 (1.0)	9.1 (1.0)	18.2 (1.4)	10.2 (0.6)
2-6 cups per week	2.5 (0.5)	3.0 (0.5)	4.5 (0.8)	8.5 (1.0)	4.5 (0.4)
1 cup per day	0.7 (0.3)	0.9 (0.3)	1.2 (0.4)	1.4 (0.3)	1.0 (0.2)
1.5 cups per day	na	0.2 (0.1)	0.2 (0.2)	0.2 (0.1)	0.1 (0.1)
≥2 cups per day	0.5 (0.3)	0.2 (0.1)	0.3 (0.2)	0.5 (0.2)	0.3 (0.1)
GIRLS					
Never/rarely	90.0 (1.3)	89.7 (1.4)	87.0 (1.7)	74.5 (2.2)	85.6 (1.3)
1 cup or fewer per week	6.3 (1.1)	7.1 (1.0)	7.9 (1.1)	17.2 (1.8)	9.5 (0.8)
2-6 cups per week	2.4 (0.6)	1.7 (0.4)	3.7 (0.8)	7.1 (1.3)	3.7 (0.5)
1 cup per day	0.7 (0.4)	1.1 (0.5)	1.2 (0.6)	1.0 (0.5)	1.0 (0.3)
1.5 cups per day	na	0.1 (0.1)	0.1 (0.1)	na	0.1 (0.0)
≥2 cups per day	0.5 (0.5)	0.2 (0.2)	na	0.1 (0.1)	0.2 (0.2)
BOYS					
Never/rarely	91.3 (1.6)	84.4 (2.0)	82.2 (2.1)	68.0 (2.1)	81.9 (1.2)
1 cup or fewer per week	5.0 (1.1)	10.1 (1.6)	10.3 (1.7)	19.2 (1.7)	10.9 (0.8)
2-6 cups per week	2.5 (0.9)	4.4 (0.9)	5.4 (1.2)	9.9 (1.5)	5.4 (0.6)
1 cup per day	0.8 (0.4)	0.6 (0.3)	1.3 (0.5)	1.8 (0.6)	1.1 (0.3)
1.5 cups per day	na	0.3 (0.3)	0.3 (0.3)	0.3 (0.2)	0.2 (0.1)
≥2 cups per day	0.4 (0.4)	0.1 (0.1)	0.5 (0.4)	0.8 (0.5)	0.5 (0.2)

Note: No significance testing was conducted. ***na*** *Indicates very low numbers.*

Figure 5.22 Usual consumption of diet soft drinks among children in primary school by sex and year group in 2015 (%, 95%CI)





SPORTS DRINK CONSUMPTION

Sports drinks are flavoured beverages that often contain carbohydrates, minerals, electrolytes (e.g., sodium, potassium, calcium, magnesium) and sometimes vitamins or other nutrients.[29] The consumption of sports drinks has been associated with weight gain in children and adolescents and there is no evidence to suggest that sports drinks are beneficial when children have participated in short bouts of physical activity, or to prevent dehydration among non-athletes.[29, 30] The Australian Dietary Guidelines recommend limiting children's consumption of sports drinks, which are of limited nutritional value.[4]

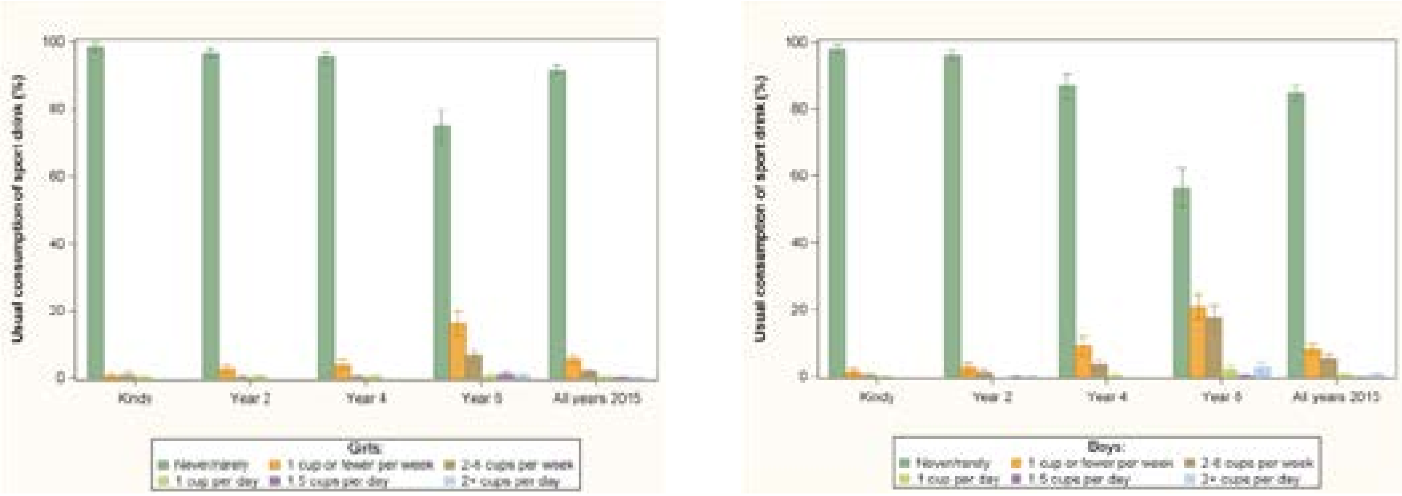
Table 5.23 and Figure 5.23 show the frequency of sports drink consumption among primary school children in 2015. Overall, 88% of children never/rarely consumed sports drinks. Intake in Years K and 2 was generally low with less than 3% of children exposed to sports drinks. This prevalence increased by Year 4, with 8% of children consuming sports drinks, and by Year 6, with 19% drinking sports drinks infrequently (1 cup or less a week) and a further 16% drinking more than 2 cups a week.

Table 5.23 Usual consumption of sport drinks among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Never/rarely	98.3 (0.5)	96.4 (0.6)	91.3 (1.1)	65.9 (2.4)	88.4 (0.9)
1 cup or fewer per week	0.9 (0.3)	2.6 (0.5)	6.5 (0.9)	18.6 (1.4)	6.9 (0.5)
2-6 cups per week	0.6 (0.3)	0.7 (0.2)	1.9 (0.3)	12.1 (1.2)	3.7 (0.4)
1 cup per day	0.1 (0.1)	0.2 (0.1)	0.3 (0.2)	1.3 (0.3)	0.5 (0.1)
1.5 cups per day	na	0.0 (0.0)	na	0.6 (0.2)	0.2 (0.1)
≥2 cups per day	na	0.1 (0.1)	na	1.6 (0.4)	0.4 (0.1)
GIRLS					
Never/rarely	98.5 (0.6)	96.8 (0.7)	95.5 (0.9)	75.2 (2.4)	91.8 (0.7)
1 cup or fewer per week	0.5 (0.3)	2.7 (0.6)	3.9 (0.8)	16.3 (1.8)	5.6 (0.5)
2-6 cups per week	0.8 (0.5)	0.2 (0.2)	0.3 (0.2)	6.6 (0.9)	1.9 (0.3)
1 cup per day	0.2 (0.2)	0.3 (0.2)	0.3 (0.2)	0.5 (0.3)	0.3 (0.1)
1.5 cups per day	na	na	na	0.9 (0.4)	0.2 (0.1)
≥2 cups per day	na	na	na	0.6 (0.4)	0.1 (0.1)
BOYS					
Never/rarely	98.0 (0.7)	96.0 (0.8)	86.9 (1.8)	56.5 (2.9)	84.8 (1.2)
1 cup or fewer per week	1.4 (0.5)	2.6 (0.7)	9.1 (1.4)	20.9 (1.8)	8.2 (0.6)
2-6 cups per week	0.5 (0.3)	1.2 (0.5)	3.6 (0.7)	17.6 (1.9)	5.5 (0.6)
1 cup per day	0.1 (0.1)	na	0.4 (0.3)	2.0 (0.7)	0.6 (0.2)
1.5 cups per day	na	0.1 (0.1)	na	0.4 (0.2)	0.1 (0.1)
≥2 cups per day	na	0.1 (0.1)	na	2.6 (0.8)	0.7 (0.2)

Note: No significance testing was conducted. ***na*** *Indicates very low numbers.*

Figure 5.23 Usual consumption of sport drinks among children in primary school by sex and year group in 2015 (%, 95%CI)



ENERGY DRINK CONSUMPTION

Energy drinks are emerging as a potential public health threat.[31] Energy drinks are beverages that contain caffeine, sugar, taurine and various vitamins and herbal supplements, and are marketed to children and adolescents to 'improve energy'.[29] Energy drinks have no therapeutic benefit, are high in sugar, and many ingredients found in these drinks are not well studied, raising concerns about excessive consumption on ill-health.[32, 33] The Australian Dietary Guidelines discourage children's consumption of energy drinks.[4]

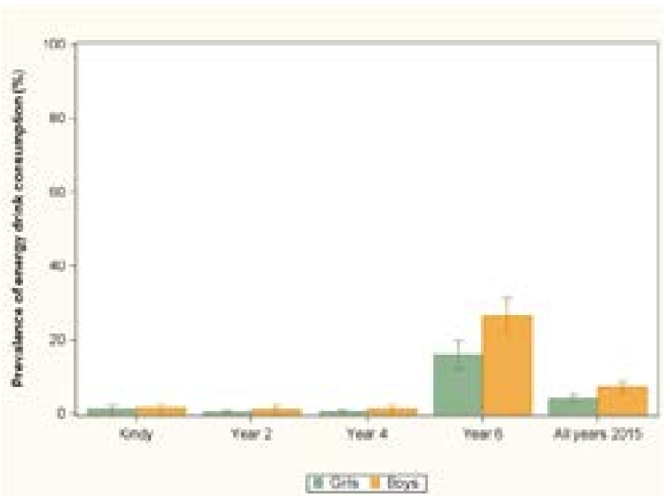
Table 5.24 and Figure 5.24 show the prevalence of consuming energy drinks among primary school children in 2015. The prevalence of drinking energy drinks was low so consumption was dichotomised into '*does not consume energy drinks*' and '*does consume energy drinks*'. Overall, the prevalence of consuming energy drinks was 6% among children, but this prevalence was substantially higher among children in Year 6 (21%), with apparently more boys consuming energy drinks than girls.

Table 5.24 Consumption of energy drinks among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Does not drink energy drinks	98.6 (0.4)	99.3 (0.3)	99.1 (0.3)	78.8 (1.9)	94.2 (0.5)
Does drink energy drinks	1.4 (0.4)	0.7 (0.3)	0.9 (0.3)	21.2 (1.9)	5.8 (0.5)
GIRLS					
Does not drink energy drinks	98.7 (0.5)	99.6 (0.2)	99.5 (0.3)	83.9 (1.9)	95.7 (0.5)
Does drink energy drinks	1.3 (0.5)	0.4 (0.2)	0.5 (0.3)	16.1 (1.9)	4.3 (0.5)
BOYS					
Does not drink energy drinks	98.5 (0.6)	98.9 (0.5)	98.7 (0.5)	73.5 (2.4)	92.7 (0.7)
Does drink energy drinks	1.5 (0.6)	1.1 (0.5)	1.3 (0.5)	26.5 (2.4)	7.3 (0.7)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 5.24 Consumption of energy drinks among children in primary school by sex and year group in 2015 (%, 95%CI)



SUMMARY OF THE FOOD BEHAVIOURS OF CHILDREN IN PRIMARY SCHOOL

The table below summarises the prevalence of indicators of diet in children in primary school.

Food indicator	Australian Dietary Guidelines	SPANS cut point	Prevalence (%, 95%CI)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
Nutritious foods: (Guideline 2 Enjoy a wide variety of nutritious foods from these five food groups every day: fruit, vegetables, grains/cereals, lean meats and poultry, fish, eggs, tofu, nuts, seeds, legumes/beans)					
Fruit	Children age 4-8 years consume at least ≥1½ serves/day and children age 11-18 years consume at ≥2 serves/day[4]	2 serves/day	72.1%	78.1%[sig]	**2015:** Overall, the proportion of children eating 2 serves of fruit was significantly higher among children from rural areas, and significantly lower among children from Asian cultural backgrounds **Change between 2010-15:** Overall, the proportion of children meeting the daily fruit recommendation significantly increased between 2010 and 2015. Within subgroups, meeting the daily fruit recommendation significantly increased among children from urban and rural areas, low and high SES backgrounds, English-speaking backgrounds, and in each BMI category
Vegetables	Children age 4-8 years consume at ≥4½ serves/ day and children age 9-11 years consume at least ≥5 serves/day[4]	5 serves/day	3.7%	5.0%[sig]	**2015:** Overall, there were no significant differences within socio-demographic or BMI groups and in the proportion of children eating 5 serves of vegetables daily **Change between 2010-15:** Overall, the proportion of children meeting the daily vegetable recommendation significantly increased between 2010 and 2015. Within subgroups, meeting the daily vegetable recommendation significantly increased among children from urban and rural areas, low and high SES backgrounds, English-speaking backgrounds, and in each BMI category
Water	Drink plenty of water	2+ cups/day	n/a	76.2%	**2015:** Subgroup differences were not assessed
Milk	For children age 2+ years the preferred choices are reduced fat milks	1+ cup/day	n/a	55.3%	**2015:** Subgroup differences were not assessed
		Whole	61.9%	60.9%	
		Skim	24.5%	26.2%	
Red meat	A maximum of 455g of lean, cooked, red meat per week. (A standard serve is 65g cooked lean red meat)	3+ times/week	52.8%	48.3%	**2015:** Subgroup differences were not assessed

Food indicator	Australian Dietary Guidelines	SPANS cut point	Prevalence (%, 95%CI)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
Discretionary foods: (Guideline 3 Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks)					
Processed meat	These foods should be limited to once a week or less	3+ times/week	35.2%	33.4%	**2015:** Subgroup differences were not assessed
Fried potato products			13.3%	8.3%	
Potato crisps/salty snacks			35.8%	29.8%	
Snacks			53.3%	48.0%	
Confectionery			31.4%	25.2%	
Ice cream/ice blocks			43.3%	34.2%	
Fruit juice	Fruit juice should be consumed only occasionally, and in small amounts because of the poor dietary fibre content and acidity. Whole fruit is preferable to juice	1+ cup/day	n/a	15.4%	**2015:** Subgroup differences were not assessed
Soft drink and cordials	Limit drinks with added sugars, such as soft drinks, cordial, energy drinks and sports drinks	≥1 cup/day	n/a	5.3%	**2015:** Overall, the proportion of children consuming one or more cups of soft drink daily was significantly higher among children from low SES backgrounds, Middle Eastern cultural backgrounds and in the obese BMI category
Flavoured water		Never	n/a	89.5%	**2015:** Subgroup differences were not assessed
Diet soft drinks			n/a	83.8%	
Sports drinks			n/a	88.4%	
Energy drinks			n/a	94.2%	

sig *Indicates statistically significant difference at P < 0.05.*

* *Comparisons are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category*

n/a *not available.*

SECONDARY SCHOOL

The following section describes the usual food consumption patterns of adolescents in Years 8 and 10 in secondary schools participating in SPANS 2015. The findings are based on self-report responses of the adolescents. The prevalence estimates (%) need to be interpreted along with their standard errors (SE); a proportionally large standard error means a less precise estimate.

There were some changes to the dietary questions and responses in 2015, so in these instances the 2010 estimates are not presented. Additionally, between SPANS 2010 and 2015, new Australian Dietary Guidelines[4] were released with new recommendations for daily serves of fruit and vegetables; hence difference in the proportions of adolescents meeting the new recommendations will reflect these changes to dietary recommendations.

FRUIT INTAKE

Fruit is an excellent source of vitamins, including folate, and phytochemicals, and provides natural sugars and dietary fibre. There is accumulating evidence suggesting that consumption of fruit protects against chronic diseases such as cardiovascular disease and some cancers.[7] The current Australian Dietary Guidelines recommend that adolescents age 11-18 years (corresponding to Years 8 and 10) consume at least two serves per day,[4] and two or more serves per day was used as the cut point for reporting purposes.

The current Australian Dietary Guidelines suggest that fruit juice with 'no added sugar' may be included among fruit serves 'only occasionally', with half a cup (125 ml) of fruit juice equivalent to one serve of fruit.[4] Because it is difficult for adolescents to know if the fruit juice they consume has no added sugar, fruit juice was not included in the serves of fruit reported.

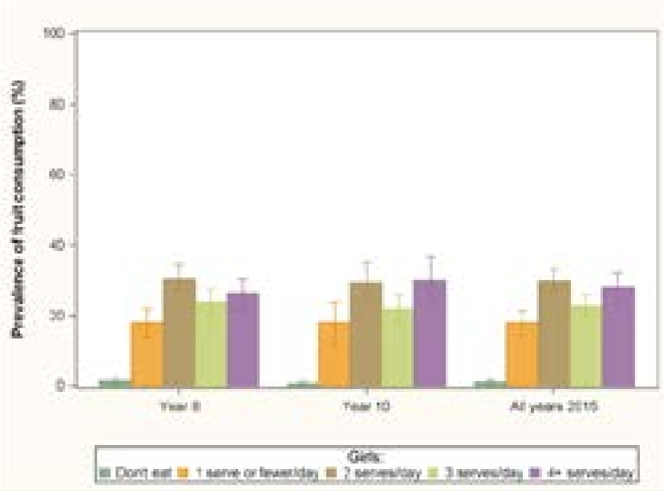
Table 5.25 and Figure 5.25 show the usual consumption of fruit among adolescents in secondary school stratified by sex and year group in 2015, and in 2010 for comparison. Overall, 1% of adolescents did not eat fruit. There were no obvious differences between boys and girls or different ages in the usual daily consumption of fruit.

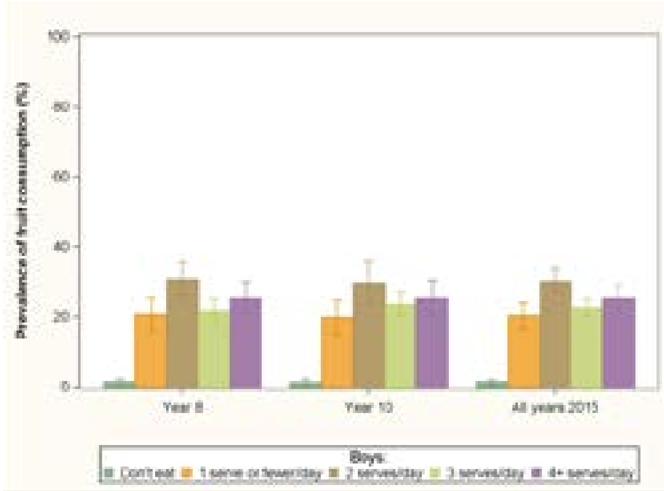
Table 5.25 Usual daily consumption of fruit among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Don't eat fruit	1.5 (0.4)	0.9 (0.3)	1.2 (0.3)	1.6 (0.3)
1 serve or less per day	19.4 (1.7)	18.9 (2.1)	19.1 (1.4)	24.6 (1.4)
2 serves per day	30.7 (1.6)	29.7 (2.3)	30.2 (1.4)	31.9 (0.9)
3 serves per day	22.7 (1.3)	22.8 (1.4)	22.7 (1.0)	23.4 (0.9)
4 or more serves per day	25.8 (1.6)	27.8 (2.3)	26.8 (1.5)	18.5 (1.1)
GIRLS				
Don't eat fruit	1.5 (0.5)	0.6 (0.4)	1.0 (0.4)	1.0 (0.3)
1 serve or less per day	18.0 (2.0)	17.9 (3.0)	17.9 (1.7)	26.4 (2.0)
2 serves per day	30.6 (1.9)	29.5 (2.7)	30.0 (1.6)	31.6 (1.7)
3 serves per day	23.8 (2.0)	21.9 (1.9)	22.8 (1.5)	23.9 (1.5)
4 or more serves per day	26.2 (2.2)	30.1 (3.4)	28.2 (2.0)	17.1 (1.3)
BOYS				
Don't eat fruit	1.5 (0.5)	1.3 (0.6)	1.4 (0.4)	2.1 (0.4)
1 serve or less per day	20.7 (2.4)	19.8 (2.5)	20.3 (1.9)	22.9 (1.7)
2 serves per day	30.8 (2.4)	29.8 (3.0)	30.3 (1.7)	32.2 (1.4)
3 serves per day	21.6 (1.8)	23.6 (1.7)	22.6 (1.3)	23.0 (1.3)
4 or more serves per day	25.4 (2.3)	25.4 (2.5)	25.4 (1.7)	19.9 (1.5)

Note: No significance testing was conducted.

Figure 5.25 Usual daily consumption of fruit among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





MEETING RECOMMENDED FRUIT SERVES

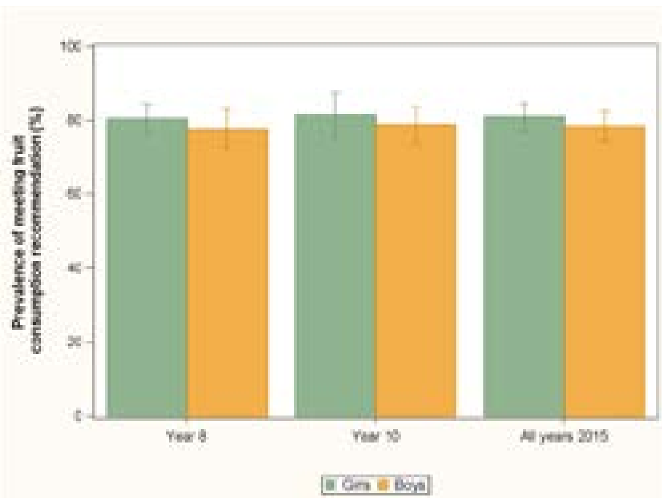
Table 5.26 and Figure 5.26 show proportion of adolescents in secondary school meeting the daily recommendation for fruit by sex and year group in 2015, and in 2010 for comparison. Overall, 80% of adolescents met the recommended fruit intake (at least two serves). There were no significant differences between boys and girls and meeting the recommended daily servings of fruit. A significantly lower proportion of adolescents met the recommended two serves of fruit per day in 2010 (74%), compared with 2015 (80%). The change was driven mainly by girls, with 73% meeting the recommendations in 2010, compared with 81% in 2015.

Table 5.26 Prevalence of consuming the recommended daily serves of fruit among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	**Year 10**	**All years**	**All years**
ALL				
Meet recommendation	79.1 (1.8)	80.2 (2.1)	79.7 (1.5)	**73.8 (1.5) b**
Do not meet recommendation	20.9 (1.8)	19.8 (2.1)	20.3 (1.5)	26.2 (1.5)
GIRLS				
Meet recommendation	80.5 (2.0)	81.5 (3.0)	81.0 (1.8)	**72.6 (2.0) b**
Do not meet recommendation	19.5 (2.0)	18.5 (3.0)	19.0 (1.8)	27.4 (2.0)
BOYS				
Meet recommendation	77.8 (2.6)	78.9 (2.4)	78.4 (2.0)	75.0 (1.8)
Do not meet recommendation	22.2 (2.6)	21.1 (2.4)	21.6 (2.0)	25.0 (1.8)

a *Indicates statistically significant difference at P < 0.05. Comparisons are between boys and girls within each year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each category.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 5.26 Prevalence of consuming the recommended daily serves of fruit among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately one in five (20%) adolescents in secondary school did not meet the recommended daily serves of fruit. Table 5.27 and Figure 5.27 show the proportion of adolescents in secondary school meeting the recommended daily serves of fruit by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of meeting the recommended daily serves of fruit was significantly higher among adolescents form rural areas (86%), compared with adolescents from urban areas (78%). The prevalence was significantly higher among girls from rural areas (88%), compared with girls from urban areas (79%).

Change between 2010-2015: Overall, the prevalence of meeting the recommended daily serves of fruit significantly increased among adolescents from rural areas, from 65% in 2010 to 86% in 2015; and among girls from rural areas, from 66% in 2010 to 88% in 2015; and boys from rural areas, from 65% in 2010 to 84% in 2015.

Socio-economic status

2015: Overall, the prevalence of meeting the recommended daily serves of fruit was not significantly different between adolescents from different SES backgrounds.

Change between 2010-2015: Overall, the prevalence of meeting the recommended daily serves of fruit significantly increased among adolescents from low SES backgrounds, from 69% in 2010 to 81% in 2015. The prevalence significantly increased among girls from low SES backgrounds, from 67% in 2010 to 80% in 2015; among girls from middle SES backgrounds, from 72% in 2010 to 80% in 2015; and among boys from low SES backgrounds from 71% in 2010 to 82% in 2015.

Cultural background

2015: Overall, the prevalence of meeting the recommended daily serves of fruit was significantly lower among adolescents from Asian cultural backgrounds (69%), compared with adolescents from English-speaking backgrounds (81%). The prevalence was significantly lower among girls from Asian cultural backgrounds (70%), compared with girls from English-speaking backgrounds (83%); and among boys from Asian cultural backgrounds (67%), compared with boys from English-speaking backgrounds (79%).

Change between 2010-2015: Overall, the prevalence of meeting the recommended daily serves of fruit significantly increased among adolescents from English-speaking backgrounds, from 73% in 2010 to 81% in 2015; and significantly decreased among adolescents from Asian cultural backgrounds, from 78% in 2010 to 69% in 2015. The prevalence significantly increased among girls from English-speaking backgrounds, from 73% in 2010 to 83% in 2015; and significantly decreased among boys from Asian cultural backgrounds, from 84% in 2010 to 67% in 2015.

Weight status

2015: Overall, there were no significant differences in the prevalence of meeting the recommended daily serves of fruit among adolescents from different BMI categories.

Change between 2010-2015: Overall, the prevalence of meeting the recommended daily serves of fruit significantly increased among adolescents in the healthy weight BMI category, from 75% in 2010 to 81% in 2015; and among girls in the healthy weight BMI category, from 72% in 2010 to 82% in 2015.

Table 5.27 Prevalence of meeting the recommended daily serves of fruit among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Locality				
Urban (ref)	77.1 (2.1)	77.9 (2.4)	77.5 (1.7)	76.4 (1.6)
Rural	**84.8 (2.0) a**	**86.3 (3.3) a**	**85.6 (2.3) a**	**65.4 (2.9) b**
SES				
Low	80.1 (2.2)	81.7 (3.5)	80.9 (2.4)	**69.2 (2.5) b**
Middle	77.3 (3.1)	77.1 (3.2)	77.2 (2.5)	71.9 (2.1)
High (ref)	80.0 (2.7)	81.5 (3.2)	80.7 (2.2)	79.7 (2.1)
Cultural background				
English (ref)	78.7 (1.9)	82.6 (2.1)	80.6 (1.6)	**73.3 (1.5) b**
European	70.5 (9.1)	88.6 (8.3)	80.0 (5.6)	84.4 (5.5)
Middle Eastern	82.0 (4.0)	77.1 (9.6)	79.8 (4.2)	77.7 (7.0)
Asian	81.9 (2.9)	**59.5 (4.4) a**	**68.6 (3.1) a**	**78.4 (3.0) b**
BMI category				
Thin	**69.2 (5.1)**	**67.2 (6.5) a**	**68.3 (4.0) a**	67.3 (3.9)
Healthy weight (ref)	80.3 (2.0)	81.3 (2.2)	80.8 (1.7)	**74.6 (1.5) b**
Overweight	80.0 (3.3)	79.2 (3.3)	79.6 (2.7)	73.4 (2.7)
Obese	75.1 (6.2)	87.5 (4.4)	81.2 (3.5)	75.8 (4.9)
GIRLS				
Locality				
Urban (ref)	78.3 (2.2)	79.1 (3.5)	78.7 (2.0)	74.5 (2.3)
Rural	**86.9 (3.4) a**	88.7 (4.6)	**87.8 (3.2) a**	**66.0 (3.9) b**
SES				
Low	78.2 (3.6)	82.3 (5.8)	80.3 (3.5)	**66.9 (3.3) b**
Middle	82.2 (3.1)	78.8 (3.2)	80.4 (2.3)	**71.8 (3.2) b**
High (ref)	81.5 (3.9)	83.1 (4.1)	82.3 (3.0)	77.9 (3.1)
Cultural background				
English (ref)	80.1 (2.3)	85.0 (2.6)	82.6 (1.8)	**72.9 (2.1) b**
European	83.8 (8.4)	83.4 (15.6)	83.7 (6.4)	86.7 (9.1)
Middle Eastern	87.6 (3.5)	**51.5 (14.0) a**	72.5 (7.7)	72.7 (9.1)
Asian	79.6 (3.2)	**63.7 (5.3) a**	**69.9 (4.0) a**	68.8 (5.0)
BMI category				
Thin	75.2 (6.0)	69.2 (11.6)	72.6 (6.0)	72.2 (4.5)
Healthy weight (ref)	80.8 (2.6)	82.4 (3.2)	81.7 (2.1)	**72.1 (2.2) b**
Overweight	82.7 (3.4)	78.9 (5.1)	80.8 (3.1)	76.4 (3.7)
Obese	78.0 (8.1)	91.9 (5.2)	84.7 (4.9)	73.0 (6.6)

	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	75.9 (3.4)	76.6 (3.0)	76.2 (2.5)	78.1 (1.7)
Rural	82.9 (2.1)	84.3 (3.4)	83.6 (2.3)	**64.8 (4.2) b**
SES				
Low	81.9 (3.0)	81.2 (3.3)	81.5 (2.5)	**71.4 (2.7) b**
Middle	73.0 (4.5)	75.6 (4.9)	74.3 (3.9)	72.0 (2.8)
High (ref)	78.5 (3.3)	79.5 (4.7)	79.0 (2.9)	81.5 (2.0)
Cultural background				
English (ref)	77.5 (2.6)	80.2 (2.6)	78.9 (2.1)	73.7 (1.9)
European	**29.7 (24.7)**	91.9 (8.6)	75.2 (8.9)	82.8 (7.8)
Middle Eastern	77.0 (5.9)	96.0 (4.0)	85.9 (3.9)	84.8 (6.9)
Asian	85.1 (6.6)	**52.6 (7.1) a**	**66.6 (6.0) a**	**84.3 (3.9) b**
BMI category				
Thin	63.0 (9.2)	**65.4 (7.2) a**	64.1 (5.6)	60.1 (6.8)
Healthy weight (ref)	79.9 (2.9)	80.1 (2.6)	80.0 (2.2)	77.0 (1.9)
Overweight	77.6 (4.7)	79.5 (4.3)	78.6 (3.8)	71.1 (3.6)
Obese	72.1 (9.2)	83.5 (7.2)	77.9 (5.6)	77.5 (5.8)

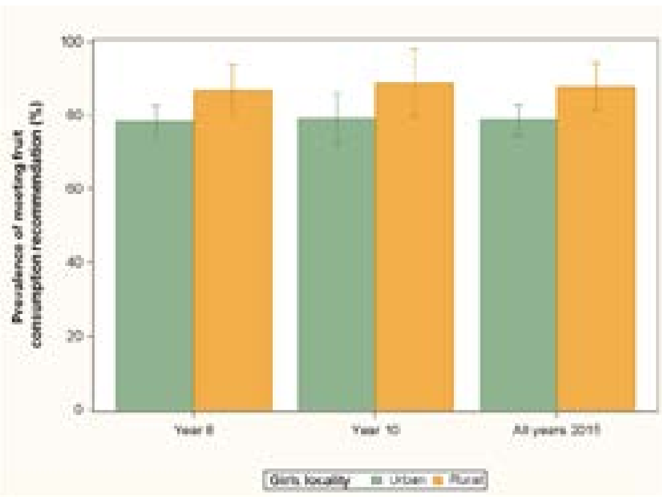
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

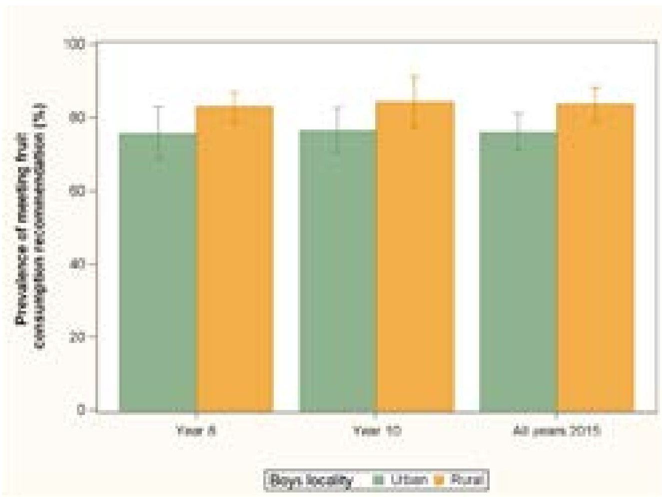
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

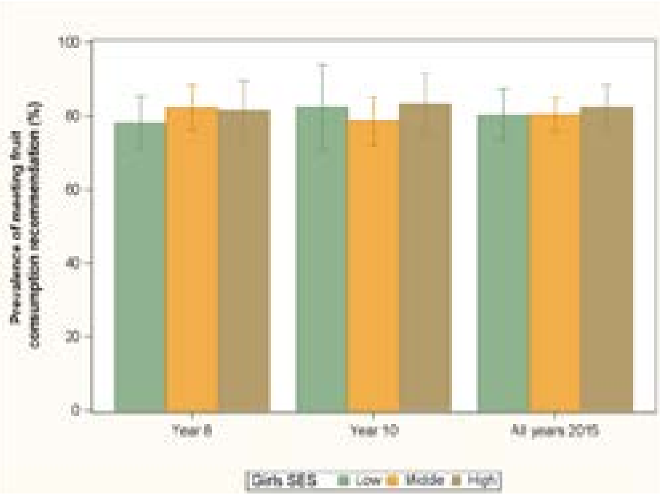
na *Indicates statistical significance could not be calculated due to low numbers.*

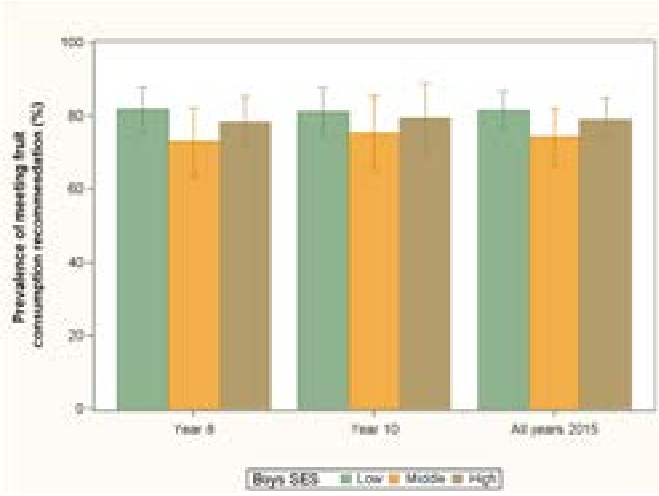
No letter means there was no statistical difference.

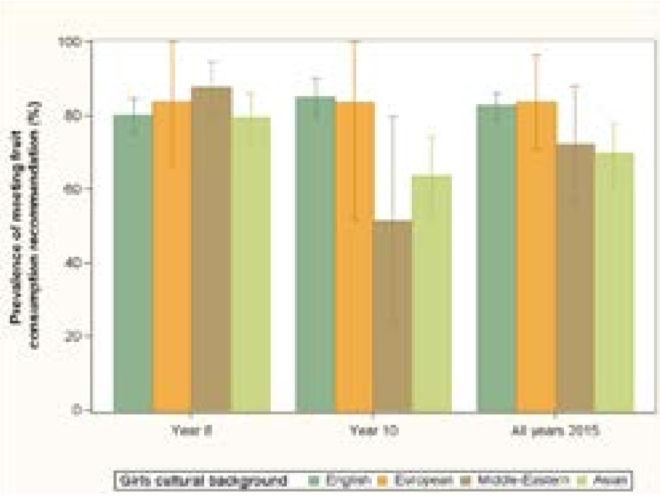
Figure 5.27 Prevalence of meeting the recommended daily serves of fruit among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

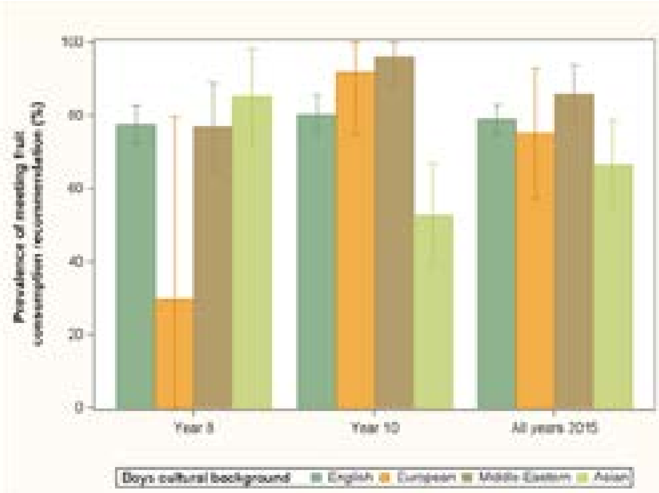


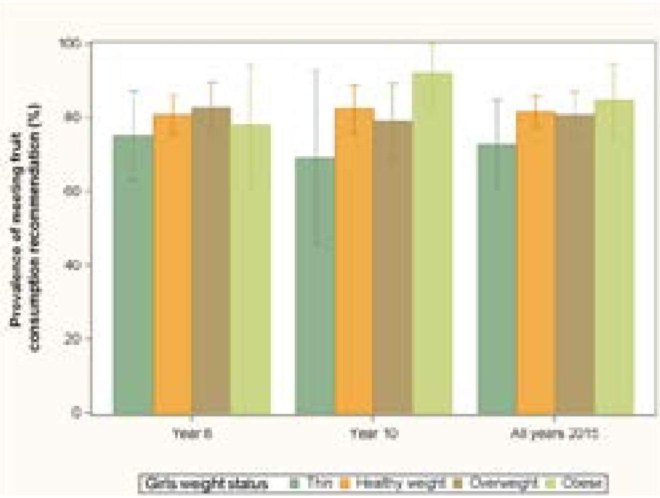


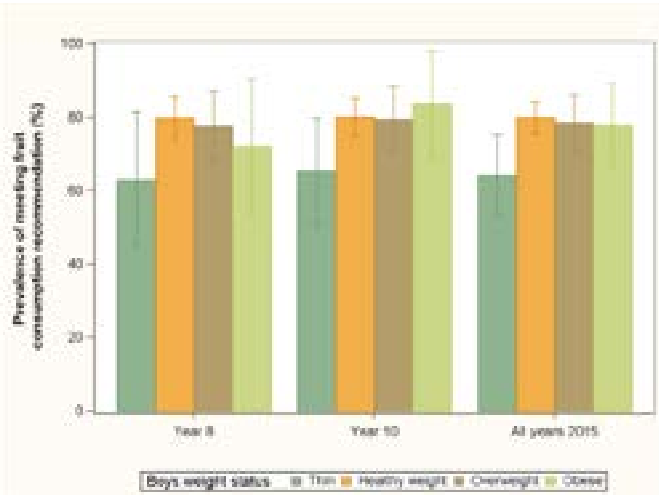

Prevalence of meeting fruit consumption recommendation (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Prevalence of meeting fruit consumption recommendation (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Prevalence of meeting fruit consumption recommendation (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting fruit consumption recommendation (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting fruit consumption recommendation (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of meeting fruit consumption recommendation (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

CONSUMPTION OF VEGETABLES

Vegetables are an important source of vitamins, minerals, phytochemicals, carbohydrates and dietary fibre. Similar to fruit, there is a wealth of evidence suggesting that vegetable consumption reduces the risk of several chronic diseases such as cardiovascular disease and cancer.[7]

The Australian Dietary Guidelines recommendations for vegetables vary by gender, with the recommendation that boys age 12-16 years (corresponding to Years 8 and 10) consume at least 5½ serves per day and girls 5 serves per day.[4] The findings presented here are based on 5 serves per day, as half serves were not included in the questionnaire response categories.

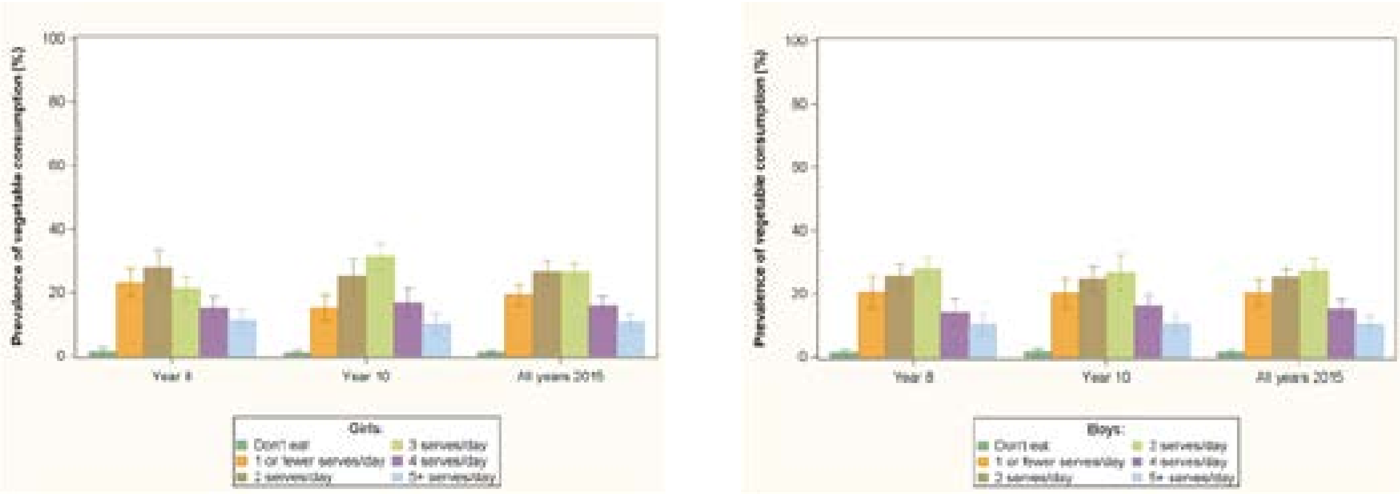
Table 5.28 and Figure 5.28 show the usual consumption of vegetables among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 11% of adolescents consumed 5 or more serves of vegetables per day, 47% ate two serves or fewer per day and 1% did not eat vegetables.

Table 5.28 Usual daily consumption of vegetables among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Don't eat vegetables	1.4 (0.4)	1.3 (0.4)	1.4 (0.3)	1.1 (0.2)
1 serve or less per day	21.8 (1.9)	17.8 (1.5)	19.8 (1.5)	22.6 (1.3)
2 serves per day	26.7 (1.9)	24.9 (1.8)	25.8 (1.2)	31.0 (1.2)
3 serves per day	24.6 (1.3)	29.1 (2.1)	26.8 (1.3)	24.4 (1.1)
4 serves per day	14.8 (1.4)	16.5 (1.5)	15.7 (1.2)	14.1 (0.9)
5 or more serves per day	10.7 (1.3)	10.4 (1.2)	10.5 (0.9)	6.9 (0.8)
GIRLS				
Don't eat vegetables	1.5 (0.6)	1.1 (0.4)	1.3 (0.3)	0.8 (0.3)
1 serve or less per day	23.2 (2.2)	15.3 (2.0)	19.2 (1.6)	22.3 (1.8)
2 serves per day	27.8 (2.8)	25.3 (2.7)	26.5 (1.7)	35.2 (1.6)
3 serves per day	21.2 (1.9)	31.4 (2.0)	26.4 (1.4)	23.5 (1.4)
4 serves per day	15.3 (1.7)	16.8 (2.3)	16.1 (1.4)	12.6 (1.2)
5 or more serves per day	11.1 (1.7)	10.2 (1.6)	10.6 (1.2)	5.5 (0.8)
BOYS				
Don't eat vegetables	1.3 (0.6)	1.6 (0.6)	1.5 (0.5)	1.5 (0.4)
1 serve or less per day	20.5 (2.6)	20.3 (2.1)	20.4 (2.0)	22.8 (1.6)
2 serves per day	25.6 (1.9)	24.6 (2.1)	25.1 (1.5)	27.1 (1.4)
3 serves per day	27.8 (2.0)	26.8 (2.9)	27.3 (1.9)	25.1 (1.4)
4 serves per day	14.4 (2.0)	16.2 (1.7)	15.3 (1.5)	15.4 (1.1)
5 or more serves per day	10.3 (1.8)	10.5 (1.5)	10.4 (1.3)	8.1 (1.0)

Note: No significance testing was conducted.

Figure 5.28 Usual daily consumption of vegetables among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



MEETING RECOMMENDED DAILY SERVES OF VEGETABLES

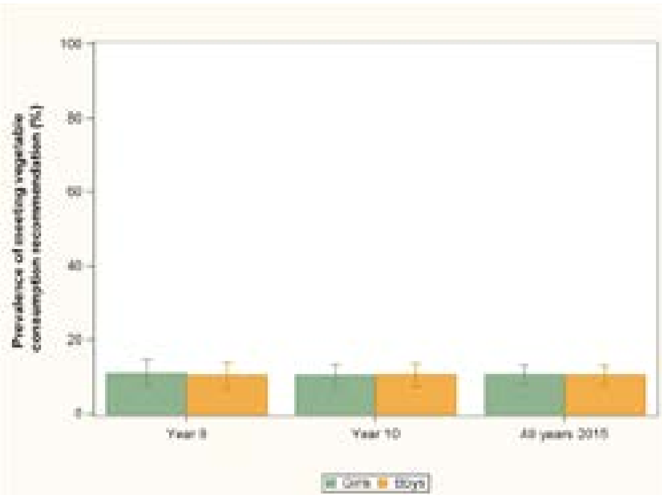
Table 5.29 and Figure 5.29 show prevalence of meeting the recommended daily serves of vegetables among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 11% met the recommendation for vegetables (at least 5 serves). There were no significant differences between boys and girls. Overall, the prevalence of meeting the recommended daily serves of vegetables significantly increased among adolescents, from 7% in 2010 to 11% in 2015; and among girls, from 6% in 2010 to 11% in 2015. It is important to note that this difference may reflect the recent changes to the Australian Dietary Guidelines and the number of recommended daily serves of vegetable intake among this age group.[4]

Table 5.29 Prevalence of consuming the recommended daily serves of vegetables among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Meet recommendation	10.7 (1.3)	10.4 (1.2)	10.5 (0.9)	**6.9 (0.8) b**
Do not meet recommendation	89.3 (1.3)	89.6 (1.2)	89.5 (0.9)	93.1 (0.8)
GIRLS				
Meet recommendation	11.1 (1.7)	10.2 (1.6)	10.6 (1.2)	**5.5 (0.8) b**
Do not meet recommendation	88.9 (1.7)	89.8 (1.6)	89.4 (1.2)	94.5 (0.8)
BOYS				
Meet recommendation	10.3 (1.8)	10.5 (1.5)	10.4 (1.3)	8.1 (1.0)
Do not meet recommendation	89.7 (1.8)	89.5 (1.5)	89.6 (1.3)	91.9 (1.0)

a *Indicates statistically significant difference at P < 0.05. Comparisons are between boys and girls within each year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each category.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 5.29 Prevalence of consuming the recommended daily serves of vegetables among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that only 11% of adolescents in secondary school meet the recommended daily serves of vegetables. Table 5.30 and Figure 5.30 show the prevalence of adolescents consuming the recommended number of vegetable serves per day by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of meeting the recommended daily serves of vegetables was significantly higher among adolescents living in rural (14%) compared with urban (9%) areas, and among boys living in rural (15%) compared with urban (9%) areas.

Change between 2010-2015: Overall, the prevalence of meeting the recommended daily serves of vegetables significantly increased among adolescents from urban areas, from 6% in 2010 to 9% in 2015; and among girls from urban areas from 5% in 2010 to 9% in 2015 and girls from rural areas from 6% in 2010 to 14% in 2015.

Socio-economic status

2015: Overall, a higher proportion of adolescents from a low SES background in Year 8 and a lower proportion of adolescents from middle SES backgrounds in Year 10 consumed recommended amounts of vegetables, compared to those from a higher SES background (7% versus 14% respectively). Overall, there were no significant differences in consumption across SES tertiles.

Change between 2010-2015: Overall, the prevalence of meeting the recommended daily serves of vegetables significantly increased among adolescents from high SES backgrounds, from 6% in 2010 to 10% in 2015; among girls from low SES backgrounds, from 6%in 2010 to 12% in 2015; and among girls from high SES backgrounds, from 6% in 2010 to 11% in 2015.

Cultural background

2015: Overall, the prevalence of meeting the recommended daily serves of vegetables was significantly lower among adolescents from a Middle Eastern cultural background (3%) compared with those from an English-speaking background (11%).

Change between 2010-2015: Overall, the prevalence of meeting the recommended vegetable intake significantly increased among adolescents from English-speaking backgrounds, from 7% in 2010 to 11% in 2015; and among girls from English-speaking backgrounds, from 6% in 2010 to 11% in 2015; and from Middle Eastern cultural backgrounds, from 6% in 2010 to 14% in 2015.

Weight status

2015: Overall, there were no consistent significant differences in the prevalence of meeting daily vegetable recommendation among adolescents from different BMI categories.

Change between 2010-2015: Overall, the prevalence of meeting the recommended daily serves of vegetables significantly increased among adolescents in the healthy weight BMI category, from 7% in 2010 to 11% in 2015; and among girls in the healthy weight BMI category,(from 6% in 2010 to 11% in 2015) and overweight BMI category (from 4% in 2010 to 12% in 2015).

Table 5.30 Prevalence of meeting the recommended daily serves of vegetables among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	**Year 10**	**All years**	**All years**
ALL				
Locality				
Urban (ref)	9.0 (1.2)	9.2 (1.2)	9.1 (0.8)	**6.3 (0.8) b**
Rural	**15.3 (3.4) a**	13.5 (2.4)	**14.4 (2.2) a**	8.6 (2.3)
SES				
Low	**14.4 (2.5) a**	10.5 (1.8)	12.4 (1.7)	7.4 (1.9)
Middle	10.7 (2.1)	**6.8 (2.0) a**	8.7 (1.5)	6.7 (1.3)
High (ref)	7.0 (1.5)	13.7 (1.9)	10.3 (1.3)	**6.5 (0.8) b**
Cultural background				
English (ref)	10.8 (1.4)	10.6 (1.3)	10.7 (1.0)	**6.8 (0.9) b**
European	9.0 (4.6)	16.5 (9.3)	12.9 (6.9)	11.8 (6.1)
Middle Eastern	15.1 (7.8)	**3.4 (2.2) a**	10.0 (4.1)	7.3 (2.3)
Asian	7.1 (2.9)	10.4 (2.9)	9.1 (2.1)	7.6 (2.2)
BMI category				
Thin	7.9 (2.9)	11.0 (4.3)	9.3 (2.5)	5.8 (1.9)
Healthy weight (ref)	11.8 (1.7)	10.3 (1.7)	11.0 (1.3)	**7.3 (0.8) b**
Overweight	9.2 (2.2)	10.7 (2.9)	9.9 (1.8)	6.1 (1.6)
Obese	8.4 (2.9)	5.9 (3.1)	7.2 (2.2)	5.7 (2.4)
GIRLS				
Locality				
Urban (ref)	9.7 (1.8)	9.1 (1.7)	9.4 (1.2)	**5.2 (0.9) b**
Rural	15.0 (3.9)	13.5 (3.6)	14.2 (3.1)	**6.4 (1.9) b**
SES				
Low	**14.6 (2.9) a**	9.5 (2.8)	12.1 (2.4)	**6.4 (1.5) b**
Middle	10.6 (2.5)	**6.6 (2.2) a**	8.6 (1.6)	4.5 (1.4)
High (ref)	7.7 (2.2)	14.0 (2.4)	10.9 (1.9)	**5.7 (0.9) b**
Cultural background				
English (ref)	11.0 (1.8)	10.9 (1.9)	10.9 (1.4)	**5.6 (0.9) b**
European	11.9 (6.3)	11.1 (8.7)	11.6 (5.8)	na
Middle Eastern	**23.5 (8.0) a**	na	14.1 (4.8)	**5.6 (2.6) b**
Asian	9.4 (4.3)	8.4 (3.3)	8.8 (3.1)	6.5 (2.7)
BMI category				
Thin	10.4 (4.8)	6.3 (3.9)	8.6 (3.1)	3.0 (1.5)
Healthy weight (ref)	10.9 (2.2)	10.8 (2.4)	10.9 (1.7)	**6.2 (1.1) b**
Overweight	11.8 (3.6)	11.7 (3.9)	11.7 (2.6)	**4.4 (1.7) b**
Obese	11.8 (4.0)	na	6.3 (2.4)	3.6 (2.3)

	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	8.3 (1.6)	9.3 (1.6)	8.8 (1.2)	7.4 (1.0)
Rural	15.6 (4.4)	13.6 (2.7)	**14.6 (2.6) a**	10.7 (2.9)
SES				
Low	14.1 (4.0)	11.3 (2.8)	12.7 (2.5)	8.4 (2.6)
Middle	10.7 (2.8)	7.0 (2.5)	8.9 (2.1)	8.7 (1.6)
High (ref)	6.2 (2.2)	13.3 (2.7)	9.6 (1.8)	7.3 (1.0)
Cultural background				
English (ref)	10.6 (1.9)	10.4 (1.7)	10.5 (1.4)	7.9 (1.1)
European	na	19.9 (13.2)	14.5 (10.0)	19.6 (9.9)
Middle Eastern	7.0 (7.6)	6.0 (3.6)	6.5 (3.7)	9.5 (4.4)
Asian	3.9 (2.6)	13.8 (5.0)	9.5 (3.4)	8.2 (2.3)
BMI category				
Thin	5.3 (3.6)	15.1 (7.4)	9.9 (3.8)	9.9 (4.4)
Healthy weight (ref)	12.6 (2.1)	9.7 (2.1)	11.2 (1.7)	8.3 (1.0)
Overweight	**6.9 (2.2) a**	9.7 (3.0)	8.3 (1.8)	7.4 (2.3)
Obese	4.9 (4.6)	11.0 (5.5)	8.0 (3.6)	7.0 (3.7)

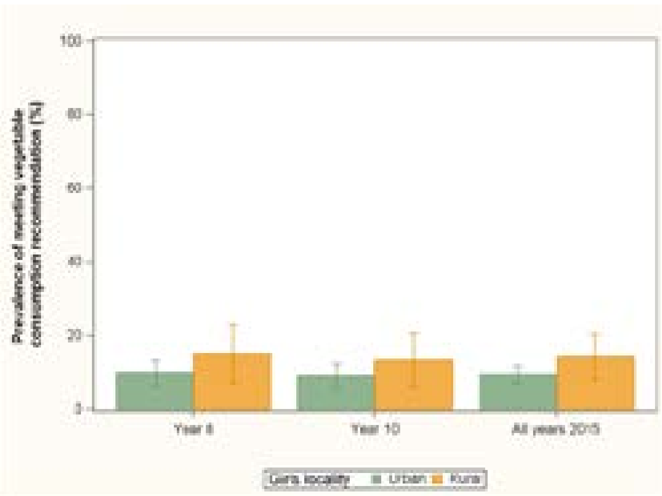
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

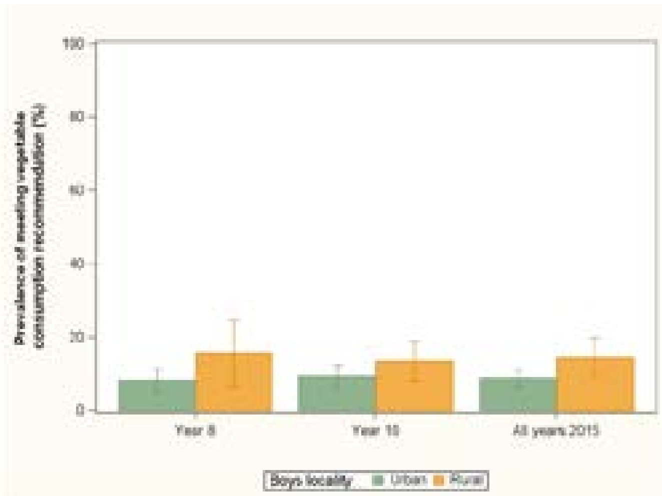
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

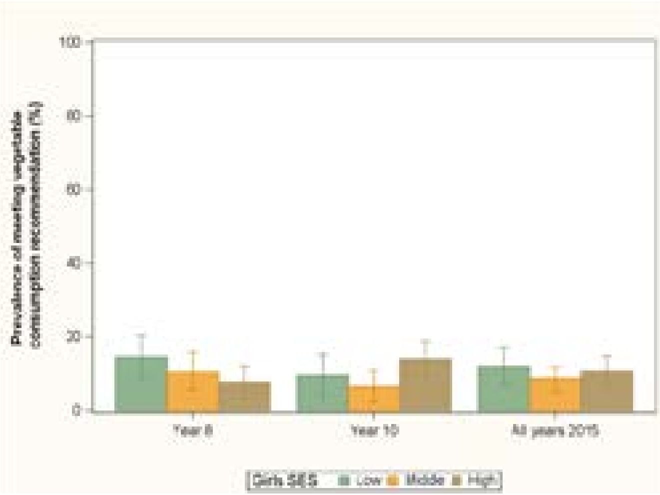
na *Indicates statistical significance could not be calculated due to low numbers.*

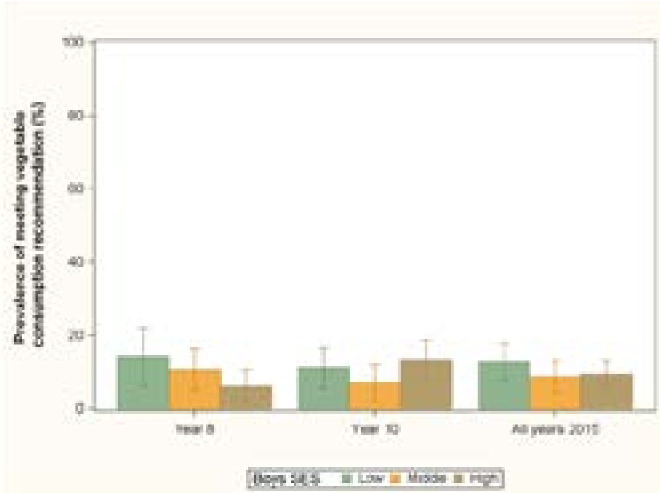
No letter means there was no statistical difference.

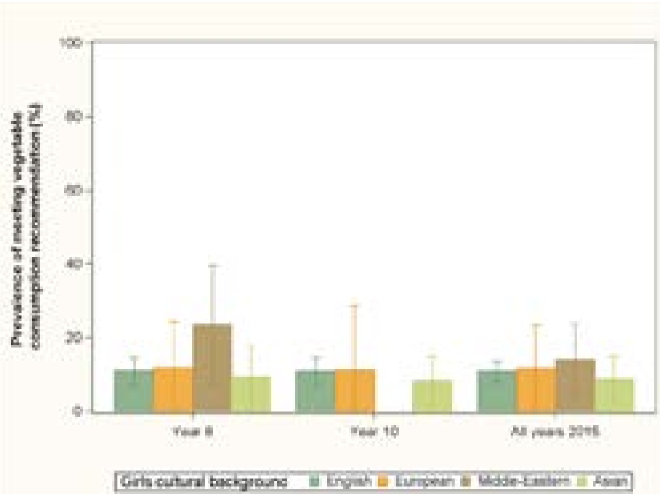
Figure 5.30 Prevalence of meeting the recommended daily serves of vegetables among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

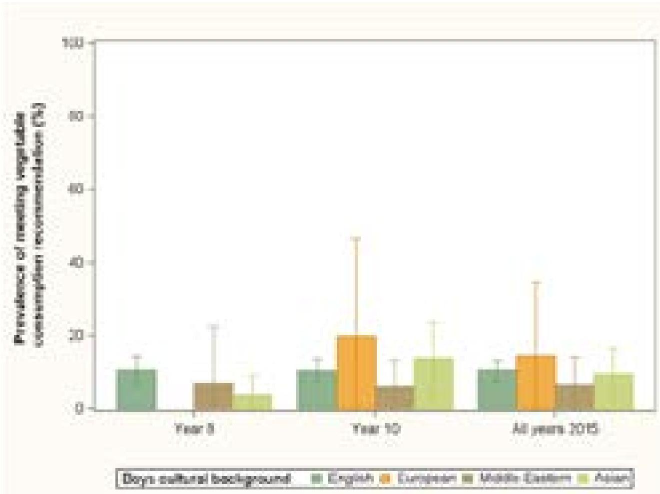


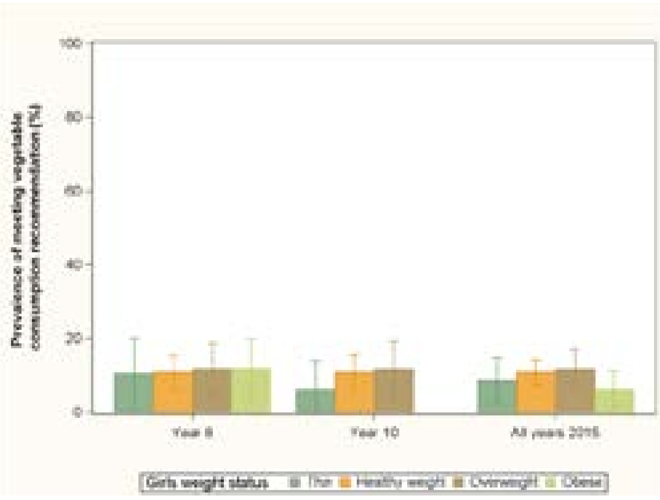


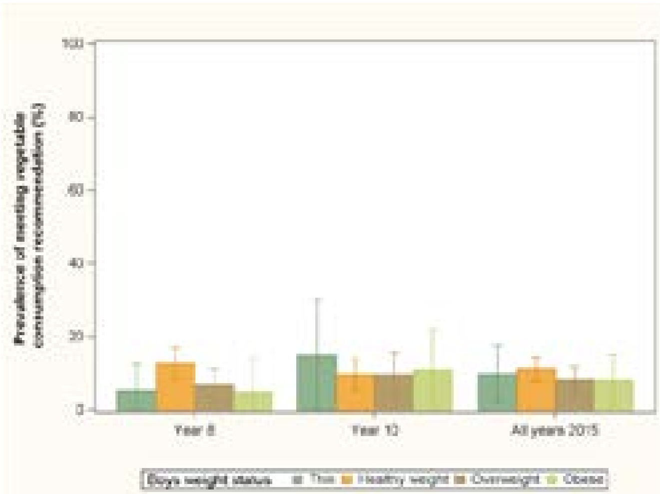

Prevalence of meeting vegetable consumption recommendation (%)
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Prevalence of meeting vegetable consumption recommendation (%)
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Prevalence of meeting vegetable consumption recommendation (%)
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting vegetable consumption recommendation (%)
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting vegetable consumption recommendation (%)
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of meeting vegetable consumption recommendation (%)
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

RED MEAT INTAKE

Red meat such as beef and lamb contribute valuable nutrients such as iron, protein, zinc and vitamin B12 to the diets of children and adolescents. However, regular consumption of larger quantities of red meat may be associated with increased risk of colorectal cancer in later life.[12]

The current Australian Dietary Guidelines recommendations for lean meats and poultry, fish, eggs, tofu, nuts and seeds, and legumes/beans, are two and a half serves for children and adolescents age 9-18 years (includes Years 8 and 10). Looking at the individual types of food consumed over a week, the recommendation is a maximum of 455g of lean, cooked, red meat each week.[4] The SPANS questionnaires collected frequency of intake consumption and not serving sizes of meat per day. Validation studies show that the question used is able to distinguish between low and high consumers of red meat.[10]

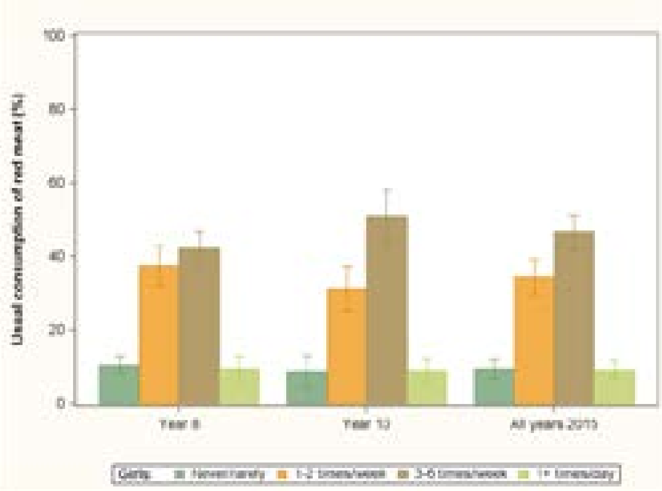
Table 5.31 and Figure 5.31 show the frequency that adolescents usually ate red meat, by sex and year group in 2015, and in 2010 for comparison. Overall, 59% of adolescents usually ate red meat three or more times a week, 11% ate red meat one or more times a day and 8% reported they did not eat red meat. There appeared to be little difference in adolescents' consumption pattern between 2010 and 2015.

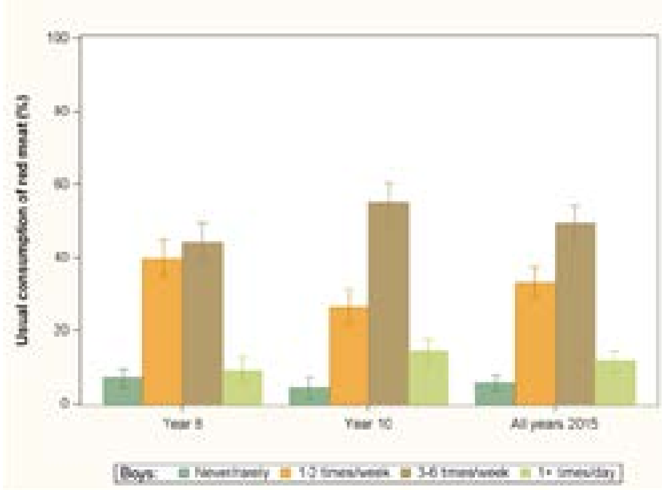
Table 5.31 Usual consumption of red meat among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Never/rarely	8.8 (0.9)	6.5 (1.3)	7.6 (0.9)	5.8 (0.6)
1-2 times per week	38.7 (2.0)	28.8 (1.8)	33.8 (1.7)	30.8 (1.2)
3-6 times per week	43.2 (1.8)	53.0 (2.2)	48.1 (1.7)	53.8 (1.4)
Once a day or more	9.4 (1.4)	11.6 (1.2)	10.5 (1.0)	9.7 (0.7)
GIRLS				
Never/rarely	10.6 (1.1)	8.7 (2.2)	9.6 (1.3)	7.8 (1.1)
1-2 times per week	37.6 (2.6)	31.3 (3.0)	34.4 (2.3)	31.2 (1.7)
3-6 times per week	42.2 (2.3)	51.1 (3.6)	46.7 (2.4)	51.8 (2.1)
Once a day or more	9.6 (1.6)	8.9 (1.7)	9.2 (1.2)	9.2 (1.1)
BOYS				
Never/rarely	7.0 (1.3)	4.3 (1.4)	5.7 (1.1)	3.8 (0.5)
1-2 times per week	39.8 (2.5)	26.4 (2.4)	33.1 (2.0)	30.3 (1.6)
3-6 times per week	44.1 (2.7)	54.9 (2.7)	49.5 (2.3)	55.7 (1.6)
Once a day or more	9.1 (1.8)	14.3 (1.7)	11.7 (1.2)	10.1 (0.9)

Note: No significance testing was conducted.

Figure 5.31 Usual consumption of red meat among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





CONSUMPTION OF PROCESSED MEAT

Processed meat such as sausages, frankfurters, devon, ham, hamburgers and chicken nuggets usually contain high amounts of fat, saturated fat and salt. A high consumption of processed meat has been associated with chronic disease such as certain cancers, cardiovascular disease and diabetes.[13] The current Australian Dietary Guidelines recommend limiting processed meats including salami, bacon, sausages and burgers[4] and describe these meat products as 'discretionary choices'. Validation studies for the processed meat question used in SPANS show that this question is able to distinguish between low and high consumers of processed meat.[10]

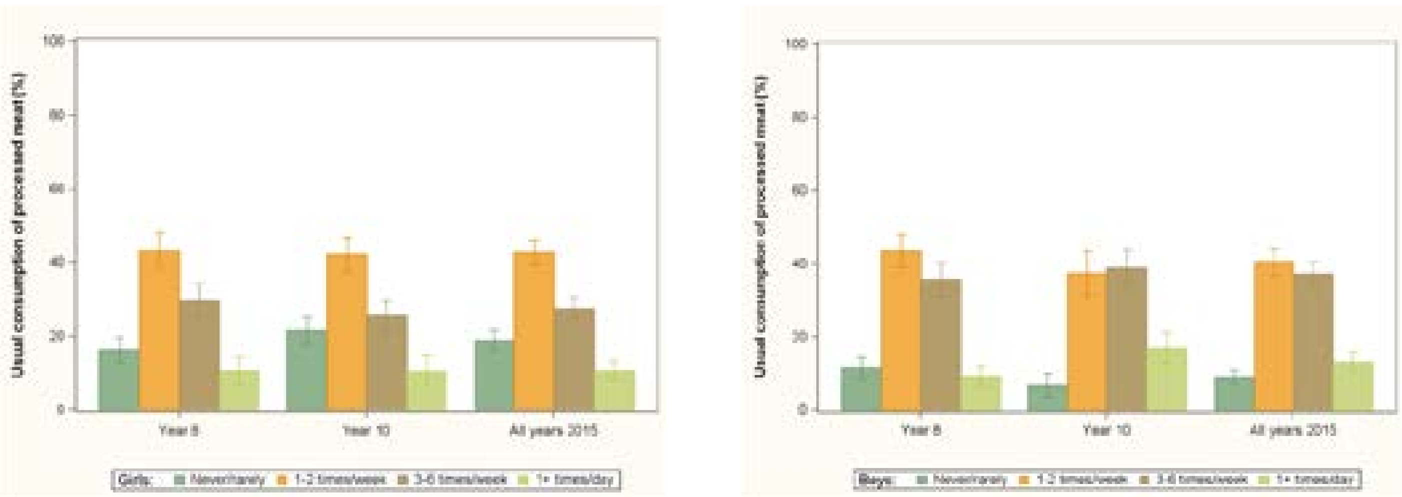
Table 5.32 and Figure 5.32 show the frequency that adolescents usually ate processed meats by sex and year group in 2015 and in 2010 for comparison. Overall, 44% of adolescents ate processed meat three or more times a week, 12% reported they ate processed meat one or more times a day and 14% reported they did not eat processed meat. There appeared to be few differences in adolescent consumption levels between 2010 and 2015.

Table 5.32 Usual consumption of processed meats among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Never/rarely	13.8 (1.2)	14.1 (1.4)	14.0 (1.0)	11.9 (0.9)
1-2 times per week	43.5 (1.5)	39.7 (1.9)	41.6 (1.1)	46.3 (1.2)
3-6 times per week	32.8 (1.4)	32.3 (1.7)	32.5 (1.0)	31.6 (1.1)
Once a day or more	10.0 (1.2)	13.8 (1.4)	11.9 (1.0)	10.2 (0.8)
GIRLS				
Never/rarely	16.2 (1.8)	21.7 (1.8)	18.9 (1.4)	16.2 (1.2)
1-2 times per week	43.4 (2.4)	42.1 (2.3)	42.8 (1.7)	49.3 (1.7)
3-6 times per week	29.7 (2.3)	25.6 (2.1)	27.6 (1.5)	27.0 (1.5)
Once a day or more	10.7 (1.8)	10.6 (2.1)	10.7 (1.3)	7.5 (0.9)
BOYS				
Never/rarely	11.5 (1.6)	6.8 (1.6)	9.1 (0.9)	7.9 (0.8)
1-2 times per week	43.6 (2.3)	37.4 (3.1)	40.5 (1.8)	43.5 (1.5)
3-6 times per week	35.8 (2.2)	38.9 (2.5)	37.3 (1.6)	35.9 (1.4)
Once a day or more	9.2 (1.4)	16.9 (2.1)	13.1 (1.4)	12.7 (1.0)

Note: No significance testing was conducted.

Figure 5.32 Usual consumption of processed meats among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



CONSUMPTION OF FRIED POTATO PRODUCTS

Hot chips, french fries, wedges and fried potato are likely to contain large amounts of fat, saturated fat and/or salt. The latest Australian Dietary Guidelines recommend limiting intake of these foods and describe them as ‘discretionary choices’.[4] Validity information demonstrates this question is able to distinguish between low and very high consumers of hot chips.[5, 14]

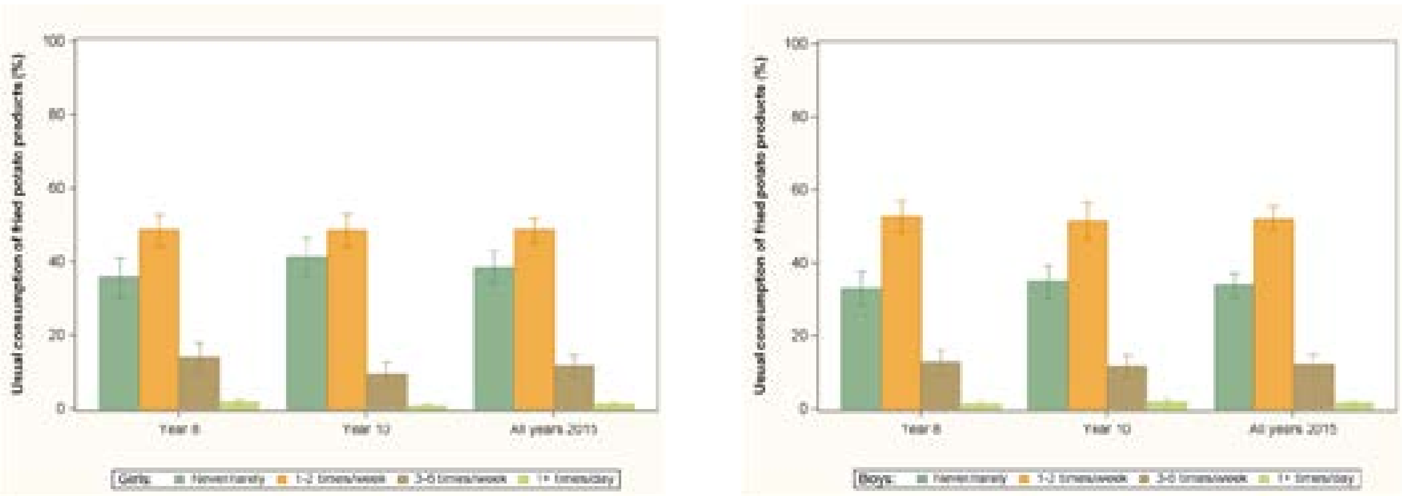
Table 5.33 and Figure 5.33 show the frequency that adolescents in secondary school reported that they usually ate fried potato products (e.g., hot chips, french fries, wedges, fried potatoes) by sex and year group in 2015, and in 2010 for comparison. Overall 36% of adolescents never or rarely ate fried potato products, 50% ate these products 1-2 times a week, 12% ate these products 3-6 times a week, and 1% reported eating fried potato products daily. The frequency of eating fried potato products appeared to be broadly consistent across year groups and between 2010 and 2015.

Table 5.33 Usual consumption of fried potato products among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Never/rarely	34.3 (1.9)	38.0 (1.7)	36.2 (1.4)	33.2 (1.4)
1-2 times per week	50.7 (1.5)	50.0 (1.8)	50.4 (1.3)	53.3 (1.3)
3-6 times per week	13.4 (1.3)	10.7 (1.2)	12.1 (1.0)	10.4 (0.9)
Once a day or more	1.5 (0.4)	1.2 (0.3)	1.4 (0.3)	3.1 (0.4)
GIRLS				
Never/rarely	35.7 (2.6)	41.2 (2.6)	38.5 (2.2)	38.4 (1.8)
1-2 times per week	48.6 (2.1)	48.5 (2.2)	48.6 (1.7)	50.1 (1.8)
3-6 times per week	14.0 (2.1)	9.6 (1.6)	11.8 (1.4)	8.6 (1.0)
Once a day or more	1.8 (0.5)	0.7 (0.3)	1.2 (0.3)	2.9 (0.6)
BOYS				
Never/rarely	33.0 (2.3)	34.9 (2.2)	34.0 (1.6)	28.3 (1.6)
1-2 times per week	52.8 (2.2)	51.5 (2.4)	52.1 (1.7)	56.3 (1.6)
3-6 times per week	12.9 (1.7)	11.8 (1.4)	12.3 (1.2)	12.1 (1.2)
Once a day or more	1.3 (0.5)	1.8 (0.6)	1.5 (0.4)	3.3 (0.6)

Note: No significance testing was conducted.

Figure 5.33 Usual consumption of fried potato products among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



CONSUMPTION OF POTATO CRISPS AND SALTY SNACKS

Potato crisps and other salty snacks (e.g., Twisties, corn chips) are energy-dense, nutrient-poor foods, which should be limited in diets. The current Australian Dietary Guidelines recommend limiting these foods in adolescents' diets[4] and describe them as 'discretionary foods'. Validity information suggests that this question is able to rank consumers according to intake, and distinguishes between low and high consumers of potato crisps and salty snacks.[14]

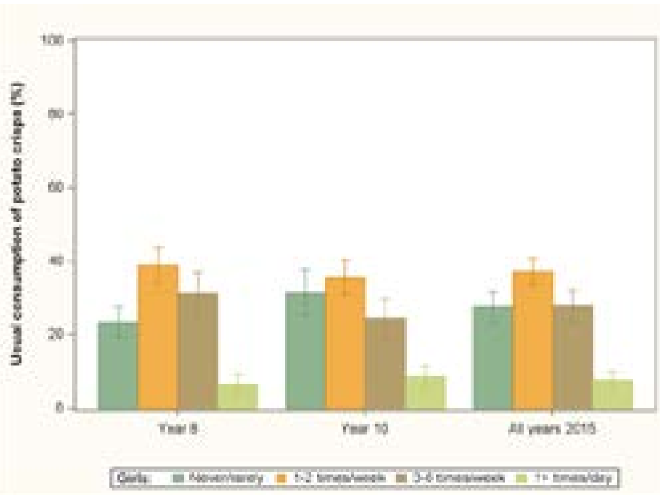
Table 5.34 and Figure 5.34 show the frequency that adolescents usually ate potato chips and salty snacks by sex and year group in 2015, and in 2010 for comparison. Overall, 24% of adolescents never or rarely ate potato chips and salty snacks, 39% ate these items 1-2 times a week, 29% ate these items 3-6 times a week, and 7% reported eating potato chips and salty snacks daily. The frequency of eating potato crisps and salty snacks appeared to be broadly consistent across year groups.

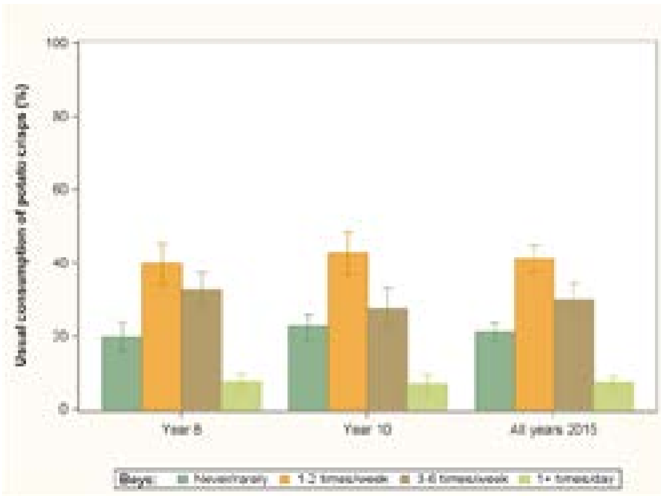
Table 5.34 Usual consumption of potato crisps and salty snacks among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Never/rarely	21.7 (1.4)	27.0 (1.8)	24.4 (1.3)	22.0 (1.3)
1-2 times per week	39.2 (2.1)	39.2 (2.0)	39.2 (1.3)	36.8 (1.1)
3-6 times per week	32.1 (1.9)	26.1 (2.0)	29.0 (1.6)	32.0 (1.3)
Once a day or more	7.0 (0.9)	7.7 (1.2)	7.4 (0.8)	9.2 (0.8)
GIRLS				
Never/rarely	23.5 (2.0)	31.4 (3.1)	27.5 (2.1)	24.8 (1.7)
1-2 times per week	38.8 (2.4)	35.6 (2.3)	37.2 (1.8)	35.5 (1.5)
3-6 times per week	31.3 (2.9)	24.5 (2.7)	27.8 (2.1)	30.8 (1.7)
Once a day or more	6.5 (1.3)	8.5 (1.6)	7.5 (1.2)	8.8 (1.0)
BOYS				
Never/rarely	19.9 (1.9)	22.7 (1.7)	21.3 (1.2)	19.4 (1.4)
1-2 times per week	39.7 (2.7)	42.7 (2.9)	41.2 (1.8)	37.9 (1.4)
3-6 times per week	32.8 (2.3)	27.6 (2.8)	30.2 (2.0)	33.1 (1.6)
Once a day or more	7.6 (1.1)	6.9 (1.4)	7.3 (0.9)	9.6 (0.9)

Note: No significance testing was conducted.

Figure 5.34 Usual consumption of potato crisps and salty snacks among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





CONSUMPTION OF SNACK FOODS

Snack foods such as sweet and savoury biscuits, cakes, doughnuts or muesli bars are energy-dense, nutrient-poor foods. The current Australian Dietary Guidelines recommend limiting these foods in the diets of children and adolescents.[4] There is currently no validity information available for this question but the reproducibility was moderate.[15]

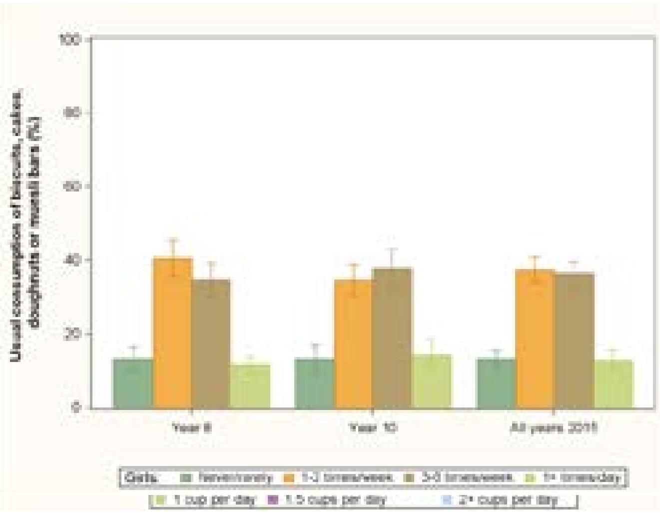
Table 5.35 and Figure 5.35 show the frequency that adolescents in secondary school reported that they usually ate snack foods (e.g., sweet and savoury biscuits, cakes, doughnuts and muesli bars) by sex and year group in 2015, and in 2010 for comparison. Overall, 14% of adolescents never or rarely ate these snacks, 37% ate snack foods 1-2 times per week, 37% ate snack foods 3-6 times a week, and 12% ate snack foods daily. The frequency of eating snack foods appeared to be broadly consistent across secondary school groups. The proportion of adolescents eating snack foods three or more times a week appeared to have declined, from 56% in 2010 to 48% in 2015.

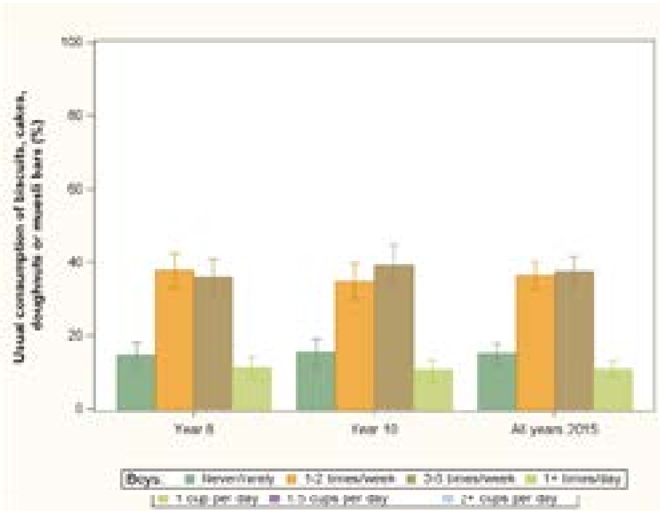
Table 5.35 Usual consumption of snack foods among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	**Year 10**	**All years**	**All years**
ALL				
Never/rarely	14.0 (1.4)	14.4 (1.1)	14.2 (1.0)	10.6 (0.7)
1-2 times per week	39.1 (2.0)	34.8 (1.8)	36.9 (1.4)	33.7 (0.9)
3-6 times per week	35.4 (1.8)	38.5 (2.0)	37.0 (1.5)	42.8 (1.1)
Once a day or more	11.4 (1.0)	12.4 (1.4)	11.9 (0.9)	12.8 (0.7)
GIRLS				
Never/rarely	13.3 (1.6)	13.3 (1.8)	13.3 (1.1)	10.9 (1.1)
1-2 times per week	40.5 (2.5)	34.6 (2.1)	37.5 (1.7)	31.4 (1.4)
3-6 times per week	34.7 (2.3)	37.9 (2.5)	36.3 (1.7)	45.0 (1.7)
Once a day or more	11.5 (1.2)	14.3 (2.2)	12.9 (1.4)	12.7 (0.9)
BOYS				
Never/rarely	14.7 (1.8)	15.4 (1.9)	15.1 (1.4)	10.4 (1.2)
1-2 times per week	37.8 (2.4)	34.9 (2.3)	36.4 (1.9)	35.8 (1.2)
3-6 times per week	36.1 (2.4)	39.2 (2.8)	37.6 (2.1)	40.8 (1.4)
Once a day or more	11.4 (1.5)	10.5 (1.5)	10.9 (1.1)	12.9 (1.0)

Note: No significance testing was conducted.

Figure 5.35 Usual consumption of snack foods among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





CONSUMPTION OF CONFECTIONERY

Confectionery, such as lollies and chocolate, are energy-dense, nutrient-poor foods, which should be limited in children's diets. The Australian Dietary Guidelines do not encourage consumption of confectionery and recommend limiting foods containing added sugar.[4] There is currently no validity information available for this question but the reproducibility was moderate.[15]

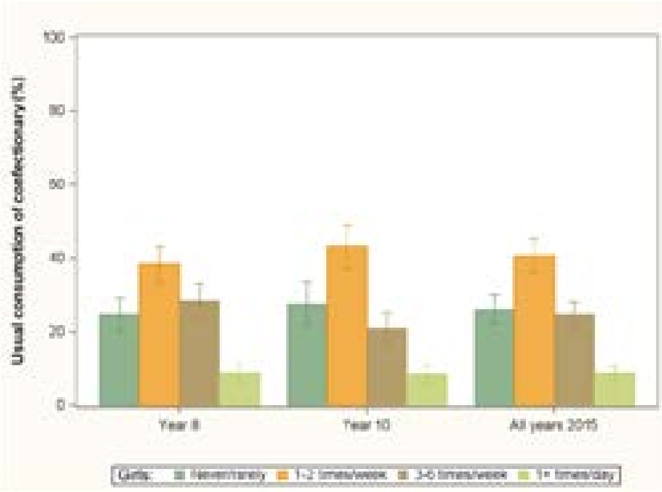
Table 5.36 and Figure 5.36 show the frequency that adolescents in secondary school reported that they usually ate confectionery by sex and year group in 2015, and in 2010 for comparison. Overall, 27% of adolescents never or rarely ate confectionery, 42% ate confectionery 1-2 times per week, 24% ate confectionery 3-6 times a week, and 7% ate confectionery daily. The frequency of eating confectionery appeared to be broadly consistent across year groups and among boys and girls. The proportion of adolescents reporting they never or rarely eat confectionery appeared to have increased from 19% in 2010 to 27% in 2015.

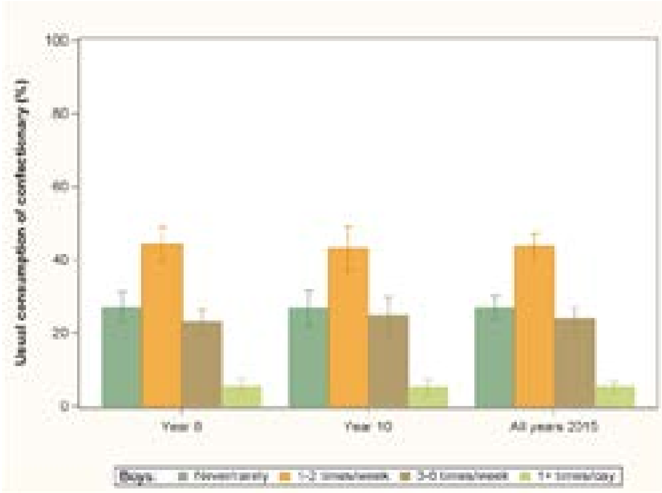
Table 5.36 Usual consumption of confectionery among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Never/rarely	25.9 (1.5)	27.2 (1.8)	26.5 (1.3)	19.4 (0.8)
1-2 times per week	41.3 (2.0)	43.2 (2.0)	42.3 (1.4)	42.3 (1.1)
3-6 times per week	25.7 (1.7)	22.9 (1.7)	24.3 (1.2)	30.5 (1.3)
Once a day or more	7.1 (0.9)	6.8 (1.0)	6.9 (0.6)	7.8 (0.5)
GIRLS				
Never/rarely	24.6 (2.3)	27.5 (3.0)	26.1 (1.9)	20.3 (1.4)
1-2 times per week	38.3 (2.4)	43.1 (2.9)	40.7 (2.2)	41.7 (1.8)
3-6 times per week	28.4 (2.4)	20.9 (2.2)	24.6 (1.7)	29.9 (1.9)
Once a day or more	8.7 (1.1)	8.4 (1.3)	8.6 (0.9)	8.1 (0.9)
BOYS				
Never/rarely	27.2 (2.0)	26.8 (2.4)	27.0 (1.6)	18.5 (1.1)
1-2 times per week	44.3 (2.3)	43.2 (3.0)	43.7 (1.8)	42.8 (1.4)
3-6 times per week	23.1 (1.6)	24.8 (2.6)	24.0 (1.5)	31.1 (1.8)
Once a day or more	5.4 (1.1)	5.2 (1.1)	5.3 (0.7)	7.6 (0.7)

Note: No significance testing was conducted.

Figure 5.36 Usual consumption of confectionery among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





CONSUMPTION OF ICE CREAM, ICE BLOCKS

Ice cream and ice blocks are energy-dense, nutrient-poor foods, which should be limited in children's diets. The Australian Dietary Guidelines recommend limiting these foods and describe them as 'discretionary choices'.[4] There is currently no validity information or reproducibility information available for this question.[15] It is important to note that SPANS was conducted in the summer months, when ice cream and ice blocks may be consumed more regularly than in the cooler months.

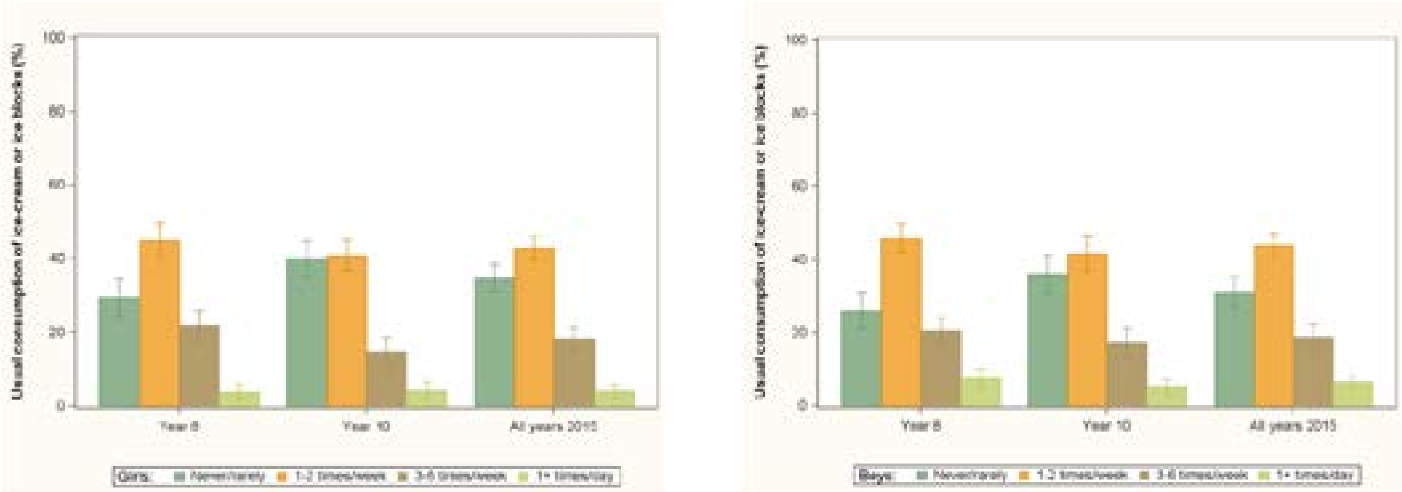
Table 5.37 and Figure 5.37 show the frequency that adolescents in secondary school reported that they usually ate ice cream or ice blocks by sex and year group in 2015, and in 2010 for comparison. Overall, 33% of adolescents never or rarely ate ice cream/ice blocks, 43% ate ice cream/ice blocks 1-2 times per week, 19% ate ice cream/ice blocks 3-6 times a week, and 5% ate ice cream/ice blocks daily. The proportion of adolescents never or rarely eating ice creams/ice blocks appeared to have increased from 23% in 2010 to 33% in 2015. Similarly, the proportion of adolescents reporting that they ate ice creams/ice blocks three or more times a week appeared to have declined, from 36% in 2010 to 24% in 2015.

Table 5.37 Usual consumption of ice creams or ice blocks among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Never/rarely	27.7 (1.8)	38.0 (1.8)	32.9 (1.4)	23.2 (1.0)
1-2 times per week	45.3 (1.4)	41.3 (1.5)	43.3 (1.1)	40.9 (1.0)
3-6 times per week	21.3 (1.3)	16.0 (1.4)	18.6 (1.2)	28.4 (0.8)
Once a day or more	5.7 (0.8)	4.7 (0.8)	5.2 (0.6)	7.6 (0.7)
GIRLS				
Never/rarely	29.4 (2.6)	40.0 (2.3)	34.8 (1.8)	24.0 (1.3)
1-2 times per week	44.8 (2.4)	40.9 (2.0)	42.8 (1.6)	41.6 (1.4)
3-6 times per week	21.9 (1.9)	14.8 (1.9)	18.3 (1.6)	26.9 (1.2)
Once a day or more	3.9 (0.9)	4.2 (1.2)	4.1 (0.8)	7.5 (1.0)
BOYS				
Never/rarely	26.1 (2.5)	36.1 (2.6)	31.1 (2.1)	22.3 (1.3)
1-2 times per week	45.9 (1.9)	41.7 (2.4)	43.8 (1.6)	40.3 (1.6)
3-6 times per week	20.6 (1.8)	17.1 (2.1)	18.8 (1.6)	29.8 (1.4)
Once a day or more	7.5 (1.3)	5.2 (1.0)	6.3 (0.9)	7.6 (0.8)

Note: No significance testing was conducted.

Figure 5.37 Usual consumption of ice creams or ice blocks among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



BEVERAGES

There were slight differences in the beverage questions and in the response categories between 2010 and 2015 SPANS, which prevent examining change in beverage consumption between survey periods. There were also some differences between SPANS surveys in the type of beverages that made up a category, for example soft drinks. The beverage response categories for SPANS 2010 and 2015 are tabulated below;

Beverage response options	
2010 response categories	**2015 response categories**
	Never/rarely *(new)*
1 cup or less/week	1 cup or less/week
2-4 cups/week	2-4 cups/week
5-6 cups/week	5-6 cups/week
1 cup/day	1 cup/day
	1.5 cups per day *(new)*
2 or more cups/day	2 or more cups/day

WATER CONSUMPTION

Water is an essential part of a healthy diet, especially for children. Inadequate water intake has been linked with indicators of poor health including obesity[16] and has been linked with reduced cognitive control and functioning in children.[17] The Australian Dietary Guidelines recommend drinking plenty of water instead of sugary drinks.[4]

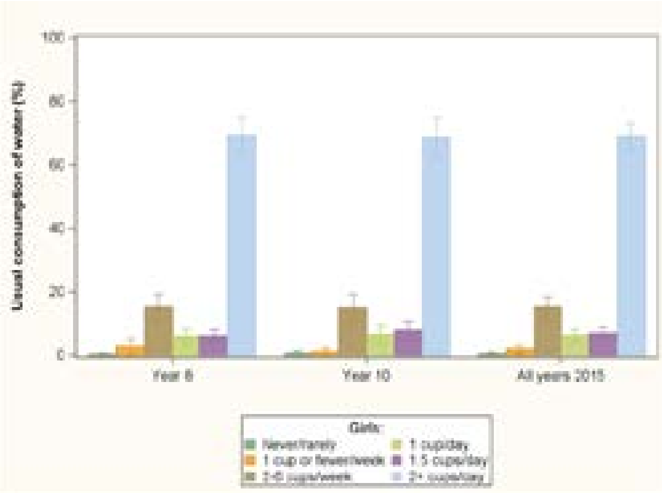
Table 5.38 and Figure 5.38 show the usual intake of water reported by adolescents in secondary school by sex and year group in 2015. Overall, 66% of adolescents drank at least 2 cups of water daily and approximately one in five adolescents drank less than 1 cup of water daily. Overall, the consumption of water appeared to be broadly consistent across year groups.

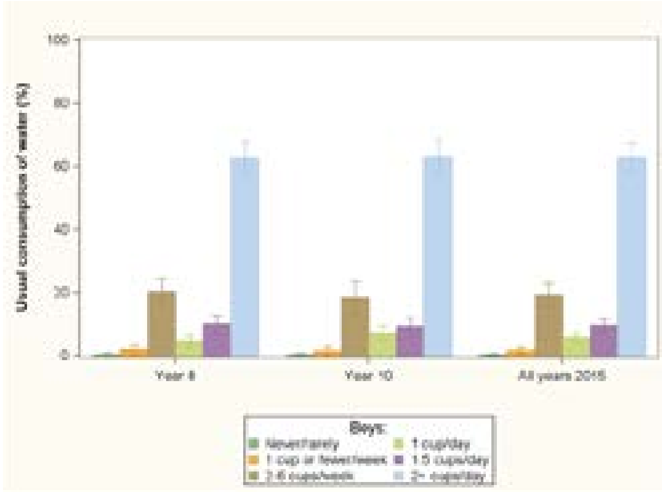
Table 5.38 Usual consumption of water among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Never/rarely	0.3 (0.2)	0.5 (0.2)	0.4 (0.2)
1 cup or fewer per week	2.4 (0.7)	1.3 (0.4)	1.9 (0.5)
2-6 cups per week	17.9 (1.6)	16.8 (1.7)	17.3 (1.4)
1 cup per day	5.3 (0.8)	7.0 (0.9)	6.1 (0.6)
1.5 cups per day	8.1 (0.8)	8.6 (1.1)	8.4 (0.7)
≥2 cups per day	66.0 (1.9)	65.9 (2.2)	65.9 (1.7)
GIRLS			
Never/rarely	0.3 (0.2)	0.6 (0.4)	0.5 (0.3)
1 cup or fewer per week	2.9 (1.2)	1.1 (0.5)	2.0 (0.7)
2-6 cups per week	15.3 (2.0)	15.0 (2.2)	15.2 (1.7)
1 cup per day	6.1 (1.2)	6.7 (1.3)	6.4 (0.9)
1.5 cups per day	6.3 (0.9)	7.9 (1.5)	7.1 (0.8)
≥2 cups per day	69.2 (2.9)	68.6 (3.1)	68.9 (2.2)
BOYS			
Never/rarely	0.4 (0.3)	0.4 (0.2)	0.4 (0.2)
1 cup or fewer per week	1.9 (0.7)	1.5 (0.7)	1.7 (0.5)
2-6 cups per week	20.4 (2.0)	18.4 (2.6)	19.4 (1.8)
1 cup per day	4.5 (1.1)	7.2 (1.1)	5.9 (0.8)
1.5 cups per day	10.0 (1.4)	9.2 (1.5)	9.6 (1.1)
≥2 cups per day	62.8 (2.4)	63.2 (2.9)	63.0 (2.2)

No significance testing was conducted.

Figure 5.38 Usual consumption of water among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





MILK CONSUMPTION

Milk is an important source of calcium, protein, riboflavin, vitamin B12 and zinc, which are vital nutrients for growth and development during childhood and adolescence. The Australian Dietary Guidelines for dairy recommend that all children age 12 -18 years (incorporating Years 8 and 10) consume three and a half serves of dairy foods, mostly reduced fat per day.[4] These can include milk, yoghurt, cheese and alternatives.[4] One serve of milk is equal to 1 cup or 250ml.

Validation studies show that the question on milk consumption used in SPANS tends to overestimate the actual amount of milk consumed, especially for the highest response category, but is able to distinguish between low and high consumers of milk.[15]

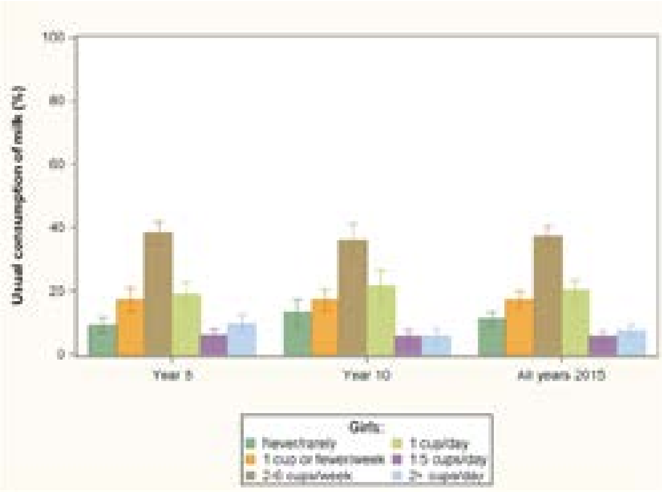
Table 5.39 and Figure 5.39 show the usual consumption of milk reported by adolescents in secondary school by sex and year group in 2015. Overall, 42% of adolescents drank one or more cups of milk daily and approximately one in five adolescents drank one cup or less of milk daily. Overall, the consumption of milk appeared to be broadly consistent across year groups, but more girls (11%) never or rarely drank milk, compared with boys (6%).

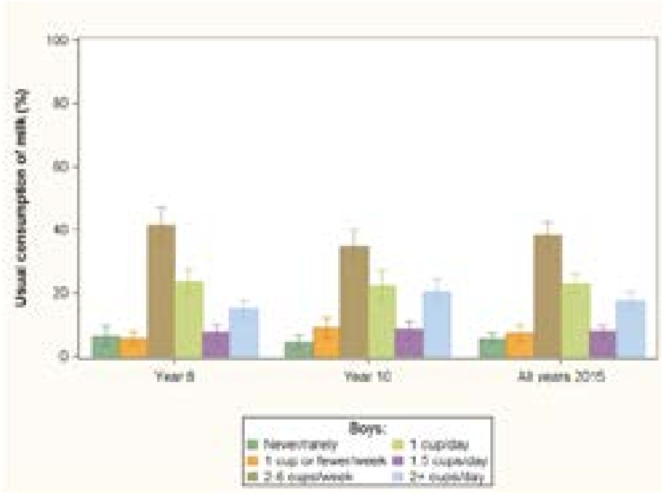
Table 5.39 Usual consumption of milk among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Never/rarely	7.9 (1.0)	8.9 (1.2)	8.4 (0.7)
1 cup or fewer per week	11.5 (1.3)	13.2 (1.2)	12.3 (1.0)
2-6 cups per week	40.1 (1.6)	35.6 (1.7)	37.8 (1.2)
1 cup per day	21.4 (1.5)	22.1 (1.5)	21.8 (1.1)
1.5 cups per day	6.8 (1.0)	7.1 (1.1)	6.9 (0.7)
≥2 cups per day	12.4 (1.0)	13.1 (1.3)	12.8 (0.8)
GIRLS			
Never/rarely	9.4 (1.2)	13.2 (2.1)	11.3 (1.1)
1 cup or fewer per week	17.4 (1.9)	17.4 (1.8)	17.4 (1.3)
2-6 cups per week	38.5 (1.8)	36.2 (2.6)	37.4 (1.7)
1 cup per day	19.0 (1.9)	21.7 (2.4)	20.4 (1.6)
1.5 cups per day	6.0 (1.2)	5.7 (1.2)	5.8 (0.8)
≥2 cups per day	9.7 (1.4)	5.8 (1.3)	7.7 (0.9)
BOYS			
Never/rarely	6.4 (1.5)	4.7 (1.0)	5.6 (0.9)
1 cup or fewer per week	5.7 (1.1)	9.0 (1.6)	7.3 (1.1)
2-6 cups per week	41.6 (2.8)	35.0 (2.6)	38.3 (2.1)
1 cup per day	23.7 (1.9)	22.6 (2.3)	23.1 (1.5)
1.5 cups per day	7.6 (1.4)	8.4 (1.4)	8.0 (0.9)
≥2 cups per day	15.0 (1.4)	20.3 (2.2)	17.7 (1.3)

No significance testing was conducted.

Figure 5.39 Usual consumption of milk among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





TYPE OF MILK CONSUMED

Low intake of milk and milk products among adolescent girls is of concern as it can lead to low calcium intake in this group, which may influence bone development.[34] The Australian Dietary Guidelines encourage the consumption of reduced fat dairy foods, preferably plain milk.[4]

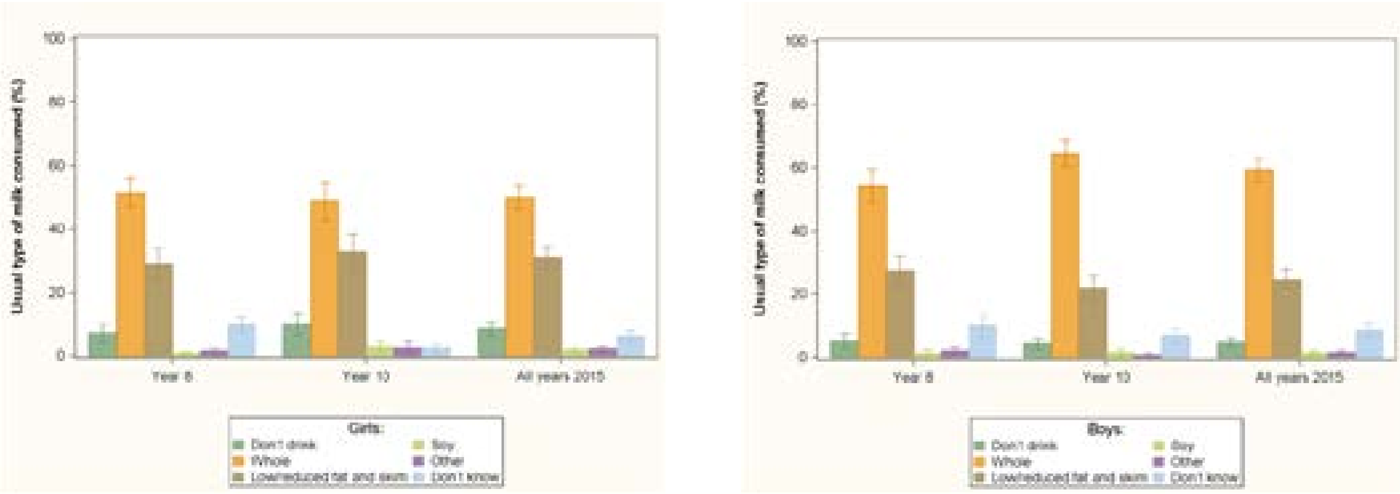
Table 5.40 and Figure 5.40 show the proportion of adolescents consuming whole, low-fat, reduced-fat or skim milk, or other types of milk in 2015, and in 2010 for comparison. Overall, 7% of adolescents did not consume milk and 8% did not know what type of milk they consumed. The majority (55%) of adolescents consumed whole milk and 28% consumed reduced/low-fat or skim milk. The type of milk adolescents consume appeared to be broadly consistent across year groups, although more girls did not drink milk and a larger proportion of boys drank whole milk. There appeared to be little difference in the type of milk adolescents consumed between 2010 and 2015.

Table 5.40 Type of milk usually consumed among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Don't drink	6.1 (0.9)	7.1 (1.1)	6.6 (0.7)	6.0 (0.5)
Whole	52.9 (1.7)	56.6 (2.1)	54.8 (1.4)	52.3 (1.3)
Low/reduced-fat and skim	28.2 (1.7)	27.5 (1.8)	27.8 (1.2)	30.0 (1.2)
Soy	0.8 (0.3)	2.3 (0.5)	1.6 (0.3)	2.3 (0.3)
Other	1.9 (0.4)	1.7 (0.5)	1.8 (0.3)	1.1 (0.3)
Don't know	10.0 (1.1)	4.8 (0.7)	7.4 (0.7)	8.4 (0.7)
GIRLS				
Don't drink	7.2 (1.4)	10.0 (1.7)	8.6 (1.1)	7.6 (0.8)
Whole	51.5 (2.3)	48.7 (2.9)	50.1 (1.9)	47.4 (1.9)
Low/reduced-fat and skim	29.1 (2.5)	32.8 (2.8)	31.0 (1.9)	34.3 (1.8)
Soy	0.6 (0.3)	3.0 (0.8)	1.8 (0.5)	2.5 (0.5)
Other	1.6 (0.5)	2.7 (1.0)	2.2 (0.6)	0.8 (0.4)
Don't know	9.9 (1.2)	2.7 (0.7)	6.3 (0.9)	7.5 (1.2)
BOYS				
Don't drink	5.1 (1.2)	4.3 (0.9)	4.7 (0.8)	4.5 (0.6)
Whole	54.2 (2.7)	64.6 (2.0)	59.4 (1.8)	56.9 (1.5)
Low/reduced-fat and skim	27.4 (2.4)	22.1 (1.9)	24.7 (1.6)	26.0 (1.5)
Soy	1.1 (0.6)	1.5 (0.6)	1.3 (0.4)	2.1 (0.4)
Other	2.1 (0.5)	0.6 (0.3)	1.4 (0.4)	1.3 (0.3)
Don't know	10.1 (1.8)	7.0 (1.2)	8.6 (1.1)	9.2 (0.9)

Note: No significance testing was conducted.

Figure 5.40 Type of milk usually consumed among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



CONSUMPTION OF FLAVOURED WATER

Flavoured waters are marketed as a healthy alternative to other carbonated and sweetened beverages.[35] In contrast to tap water, bottled flavoured water frequently includes citric and other fruit-derived acids that contribute to dental erosion.[19] Indeed, health professionals advocate that flavoured sparkling water drinks should be regarded as potentially erosive, and preventive advice on their consumption should recognise them as acidic drinks, rather than water with flavouring.[19] The Australian Dietary Guidelines do not encourage the consumption of flavoured waters in children and categorise flavoured water as a sugary drink.[4]

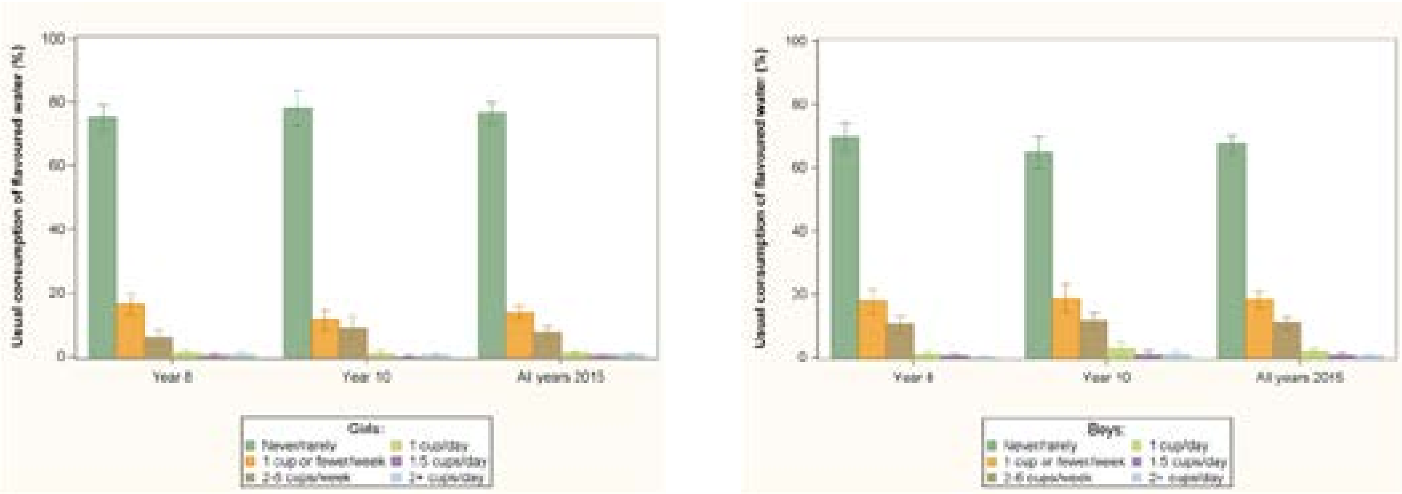
Table 5.41 and Figure 5.41 show the frequency that adolescents in secondary school reported that they usually consumed flavoured water (e.g., smart water, vitamin water) by sex and year group in 2015. Overall, 3% of adolescents consumed one or more cups of flavoured water daily and 72% never or rarely consumed flavoured water. More girls (77%) appeared to never or rarely consume flavoured water, compared with boys (67%).

Table 5.41 Usual consumption of flavoured water among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	Year 10	All years
ALL			
Never/rarely	72.4 (1.4)	71.5 (2.4)	71.9 (1.4)
1 cup or fewer per week	17.1 (1.1)	15.1 (1.5)	16.1 (0.9)
2-6 cups per week	8.3 (1.0)	10.2 (1.1)	9.3 (0.7)
1 cup per day	1.2 (0.3)	1.8 (0.5)	1.5 (0.3)
1.5 cups per day	0.5 (0.2)	0.5 (0.3)	0.5 (0.2)
≥2 cups per day	0.4 (0.2)	0.8 (0.3)	0.6 (0.2)
GIRLS			
Never/rarely	75.1 (2.1)	78.1 (2.8)	76.6 (1.7)
1 cup or fewer per week	16.5 (1.6)	11.4 (1.6)	13.9 (1.1)
2-6 cups per week	6.1 (1.1)	9.0 (1.8)	7.6 (1.0)
1 cup per day	1.2 (0.4)	0.9 (0.5)	1.1 (0.3)
1.5 cups per day	0.4 (0.3)	0.1 (0.1)	0.3 (0.2)
≥2 cups per day	0.7 (0.5)	0.5 (0.3)	0.6 (0.3)
BOYS			
Never/rarely	69.8 (2.1)	64.9 (2.5)	67.4 (1.5)
1 cup or fewer per week	17.7 (1.9)	18.8 (2.1)	18.3 (1.3)
2-6 cups per week	10.5 (1.4)	11.5 (1.4)	11.0 (1.0)
1 cup per day	1.2 (0.4)	2.7 (0.9)	1.9 (0.5)
1.5 cups per day	0.6 (0.3)	1.0 (0.7)	0.8 (0.4)
≥2 cups per day	0.2 (0.1)	1.1 (0.5)	0.6 (0.2)

Note: No significance testing was conducted.

Figure 5.41 Usual consumption of flavoured water among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



FRUIT JUICE CONSUMPTION

The Australian Dietary Guidelines recommend limiting fruit juice consumption in children.[4] Fruit juice is a source of glucose and sucrose and high consumption of these sugars without the corresponding fibre, as is commonly present in fruit juice, is associated with the metabolic syndrome, liver injury and obesity.[20] There is accumulating evidence that high fruit juice consumption is associated with increased risk for obesity, even among young children.[21]

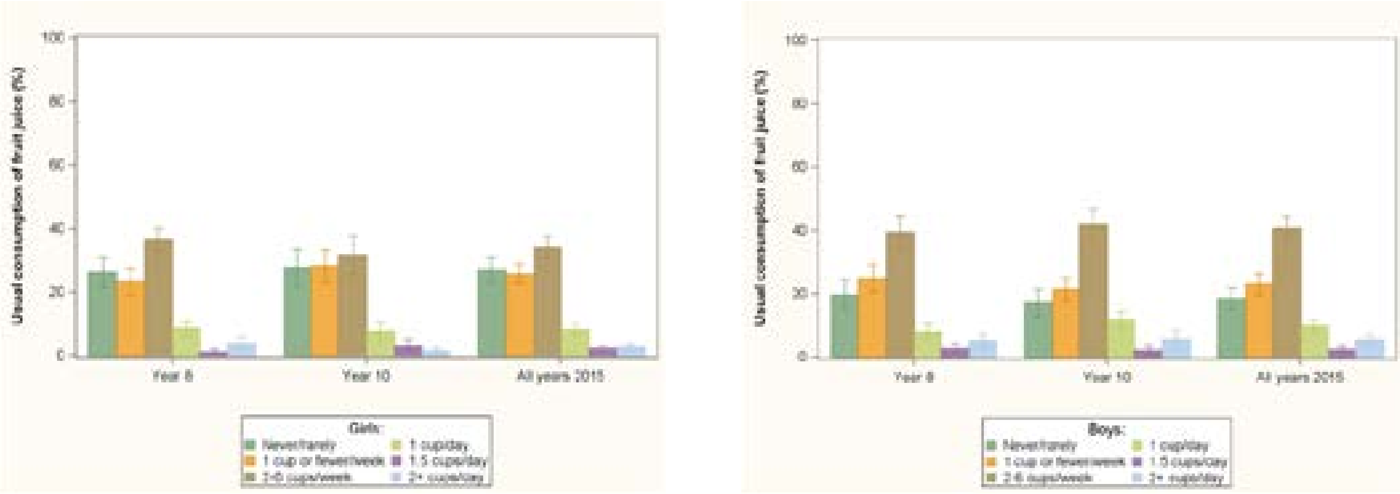
Table 5.42 and Figure 5.42 show the frequency that adolescents usually consumed fruit juice by sex and year group in 2015. Overall, 23% of adolescents never or rarely consumed fruit juice and 15% consumed one or more cups of fruit juice daily. More girls (27%) appeared to never or rarely consume fruit juice, compared with boys (19%).

Table 5.42 Usual consumption of fruit juice among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Never/rarely	23.0 (1.8)	22.5 (1.9)	22.7 (1.5)
1 cup or fewer per week	24.1 (1.2)	24.7 (1.5)	24.4 (0.9)
2-6 cups per week	38.1 (1.7)	36.9 (2.0)	37.5 (1.4)
1 cup per day	8.3 (0.9)	9.7 (1.1)	9.0 (0.7)
1.5 cups per day	2.0 (0.4)	2.8 (0.5)	2.4 (0.3)
≥2 cups per day	4.5 (0.7)	3.5 (0.8)	4.0 (0.6)
GIRLS			
Never/rarely	26.3 (2.4)	27.7 (2.8)	27.0 (2.1)
1 cup or fewer per week	23.4 (2.0)	28.1 (2.6)	25.8 (1.5)
2-6 cups per week	36.6 (1.9)	31.7 (3.1)	34.1 (1.8)
1 cup per day	8.6 (1.2)	7.6 (1.6)	8.1 (1.0)
1.5 cups per day	1.1 (1.2)	3.4 (1.0)	2.3 (0.5)
≥2 cups per day	4.0 (1.0)	1.4 (0.6)	2.7 (0.7)
BOYS			
Never/rarely	19.7 (2.3)	17.2 (2.1)	18.5 (1.7)
1 cup or fewer per week	24.9 (2.1)	21.4 (1.9)	23.1 (1.7)
2-6 cups per week	39.5 (2.6)	42.0 (2.4)	40.8 (1.9)
1 cup per day	8.0 (1.3)	11.6 (1.4)	9.8 (0.9)
1.5 cups per day	2.8 (0.7)	2.2 (0.7)	2.5 (0.5)
≥2 cups per day	5.0 (1.1)	5.5 (1.4)	5.3 (1.0)

Note: No significance testing was conducted.

Figure 5.42 Usual consumption of fruit juice among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOFT DRINK CONSUMPTION

The Australian Dietary Guidelines discourage consumption of soft drinks in adolescents.[4] Soft drinks or sugar sweetened beverages have been shown to be a major contributor to sugar and energy consumption in adolescents' diets.[22] There are clear links between soft drink consumption and increased body weight[23, 24] and dental decay.[25]

Differences in soft drink consumption between 2010 and 2015 were not assessed because of changes to the question response categories and the types of drinks that were included in the category. In 2010, sports drinks were categorised under soft drinks; in 2015 they were in a separate category. Consumption of cordial was included together with carbonated sugar-sweetened beverages. Consumption of diet soft drinks and diet cordials was measured using a separate survey item.

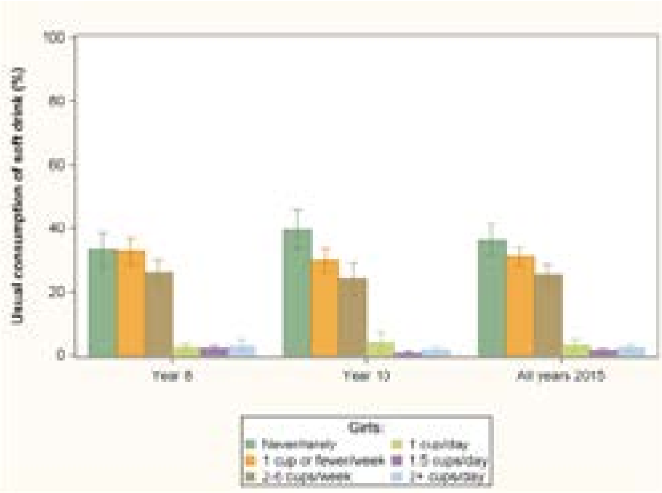
Table 5.43 and Figure 5.43 show the frequency that adolescents usually consumed soft drinks by sex and year group in 2015. Overall, 29% of adolescents never or rarely consumed soft drinks, 31% drank 2-6 cups a week, and one in 10 adolescents (10%) consumed one or more cups daily. More girls (36%) appeared to never or rarely consume soft drinks, compared with boys (22%).

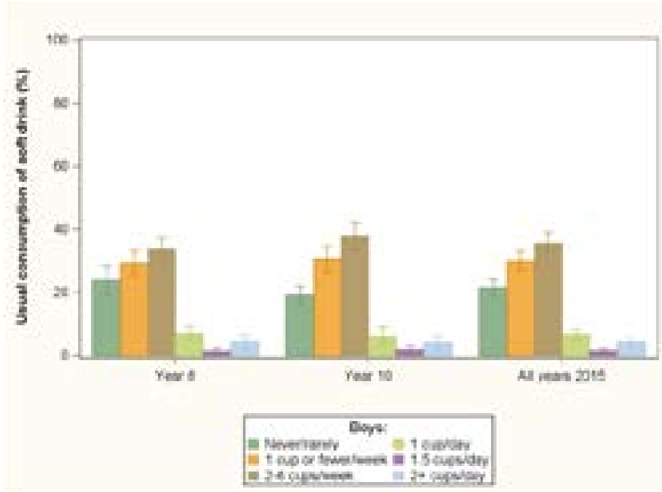
Table 5.43 Usual consumption of soft drinks among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	Year 10	All years
ALL			
Never/rarely	28.5 (1.8)	29.4 (2.0)	29.0 (1.6)
1 cup or fewer per week	31.0 (1.3)	30.2 (1.4)	30.6 (1.1)
2-6 cups per week	30.0 (1.3)	31.1 (1.8)	30.5 (1.3)
1 cup per day	4.8 (0.7)	5.2 (1.0)	5.0 (0.7)
1.5 cups per day	1.8 (0.4)	1.3 (0.3)	1.5 (0.3)
≥2 cups per day	3.8 (0.8)	2.9 (0.7)	3.3 (0.5)
GIRLS			
Never/rarely	33.2 (2.7)	39.6 (3.1)	36.4 (2.5)
1 cup or fewer per week	32.7 (2.1)	29.8 (1.9)	31.2 (1.5)
2-6 cups per week	26.2 (2.0)	24.1 (2.6)	25.2 (1.8)
1 cup per day	2.6 (0.6)	4.2 (1.6)	3.4 (0.9)
1.5 cups per day	2.1 (0.6)	0.6 (0.3)	1.4 (0.4)
≥2 cups per day	3.1 (1.0)	1.7 (0.7)	2.4 (0.6)
BOYS			
Never/rarely	24.0 (2.3)	19.2 (1.5)	21.6 (1.4)
1 cup or fewer per week	29.4 (2.0)	30.6 (2.1)	30.0 (1.6)
2-6 cups per week	33.7 (1.9)	38.0 (2.2)	35.8 (1.6)
1 cup per day	7.0 (1.2)	6.3 (1.4)	6.7 (1.0)
1.5 cups per day	1.5 (0.5)	1.9 (0.6)	1.7 (0.4)
≥2 cups per day	4.4 (1.1)	4.0 (1.2)	4.2 (0.8)

Note: No significance testing was conducted.

Figure 5.43 Usual consumption of soft drinks among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





SOFT DRINKS – MORE THAN ONE CUP A DAY

Although there is no consensus on the dose that may cause ill-health, there is accumulating evidence that more than one cup of sugar-sweetened beverage a day may be associated with adverse health effects including weight gain and dental caries.[26] Educating adolescents and increasing community awareness of the adverse effects from drinking more than one cup of soft drink a day is of great importance, especially because these may be readily available in both school and home setting.

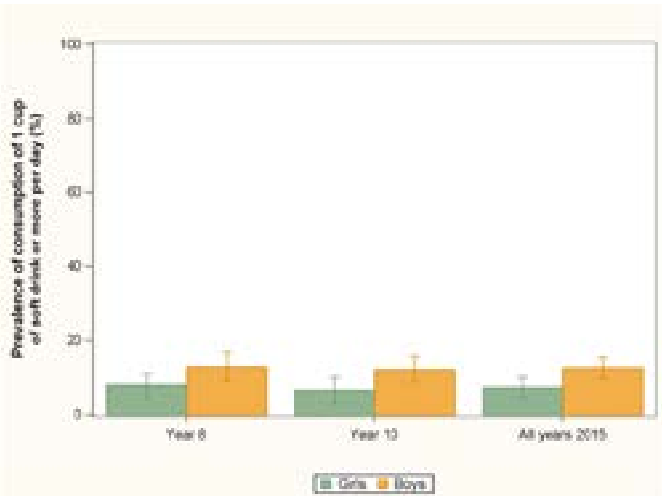
Table 5.44 and Figure 5.44 show the proportion of adolescents that reported they usually drank one or more cups of soft drink daily by sex and year group in 2015. There was a non-significant difference in the proportion of girls (7%) consuming one or more cups of soft drink a day, compared with boys (13%).

Table 5.44 Prevalence of consuming one or more cups of soft drink daily among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Drinks < 1 cup daily	89.6 (1.3)	90.6 (1.4)	90.1 (1.1)
Drinks ≥ 1 cup daily	10.4 (1.3)	9.4 (1.4)	9.9 (1.1)
GIRLS			
Drinks < 1 cup daily	92.1 (1.7)	93.5 (1.7)	92.8 (1.4)
Drinks ≥ 1 cup daily	7.9 (1.7)	6.5 (1.7)	7.2 (1.4)
BOYS			
Drinks < 1 cup daily	87.1 (1.9)	87.8 (1.8)	87.4 (1.4)
Drinks ≥ 1 cup daily	12.9 (1.9)	12.2 (1.8)	12.6 (1.4)

a Indicates statistically significant difference at P < 0.05. Comparisons are between boys and girls within each year group.
na Indicates statistical significance could not be calculated due to low numbers.
No letter means there was no statistical difference.

Figure 5.44 Prevalence of consuming one or more cups of soft drink daily among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately one in 10 adolescents consume one or more cups of soft drink daily. Table 5.45 and Figure 5.45 show the proportion of adolescents who consume one or more cups of soft drink daily by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of consuming one or more cups of soft drink daily between adolescents in urban and rural areas; although more adolescents from rural areas in Year 10 (12%) consumed the higher amount of soft drink, compared to Year 10 adolescents from urban areas (5%).

Socio-economic status

2015: Overall, the prevalence of consuming one or more cups of soft drink daily was significantly higher among adolescents from low (13%) and middle SES (11%), compared with adolescents from high SES backgrounds (6%). The prevalence was significantly higher among girls from low (11%) and middle SES (8%), compared with girls from high SES backgrounds (3%); and among boys from low (14%) and middle SES (14%), compared with boys from high SES backgrounds (9%).

Cultural background

2015: Overall, there were no significant differences in the prevalence of consuming one or more cups of soft drink daily between adolescents from different cultural backgrounds; although among Year 8 adolescents, prevalence of consuming this amount of soft drink was significantly higher among those from a Middle Eastern cultural background (24%), compared with those from English-speaking backgrounds (10%).

Weight status

2015: The prevalence of consuming one or more cups of soft drink daily was significantly higher among girls in the obese BMI category (13%), compared with girls in the healthy weight BMI category (6%); and was significantly lower among boys in the overweight BMI category (8%), compared with boys in the healthy weight BMI category (14%).

Table 5.45 Prevalence of drinking one or more cups of soft drink daily among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015		
	Year 8	Year 10	All years
ALL			
Locality			
Urban (ref)	10.4 (1.6)	8.5 (1.4)	9.4 (1.3)
Rural	10.6 (1.9)	11.7 (3.5)	11.1 (2.3)
SES			
Low	**12.8 (2.1) a**	**12.4 (2.8) a**	**12.6 (1.9) a**
Middle	**12.3 (1.9) a**	**10.2 (1.6) a**	**11.3 (1.4) a**
High (ref)	6.3 (1.8)	5.2 (1.5)	5.7 (1.3)
Cultural background			
English (ref)	10.1 (1.3)	9.5 (1.5)	9.8 (1.2)
European	14.7 (10.5)	4.1 (4.3)	9.1 (5.8)
Middle Eastern	**23.5 (7.4) a**	7.5 (4.8)	16.0 (4.0)
Asian	8.7 (3.6)	6.4 (2.8)	7.3 (2.4)
BMI category			
Thin	9.7 (3.3)	15.0 (4.9)	12.1 (3.4)
Healthy weight (ref)	10.7 (1.7)	9.6 (1.6)	10.1 (1.3)
Overweight	8.2 (1.7)	6.5 (2.2)	7.4 (1.4)
Obese	17.3 (5.2)	12.0 (5.7)	14.8 (4.4)
GIRLS			
Locality			
Urban (ref)	8.5 (2.1)	4.6 (1.1)	6.5 (1.4)
Rural	6.0 (2.3)	**12.0 (5.2) a**	9.0 (3.3)
SES			
Low	**9.3 (2.4) a**	**12.2 (3.9) a**	**10.7 (2.6) a**
Middle	**11.3 (3.8)**	5.1 (1.5)	**8.1 (2.3) a**
High (ref)	3.4 (1.7)	1.9 (1.1)	2.7 (1.1)
Cultural background			
English (ref)	7.6 (1.9)	6.9 (2.0)	7.2 (1.6)
European	na	10.6 (11.2)	3.9 (4.1)
Middle Eastern	19.2 (10.2)	11.1 (11.0)	16.0 (6.4)
Asian	9.3 (3.7)	1.6 (1.6)	4.7 (1.9)
BMI category			
Thin	9.1 (4.8)	14.9 (6.9)	11.6 (4.2)
Healthy weight (ref)	6.7 (1.7)	6.2 (2.2)	6.4 (1.5)
Overweight	8.0 (2.6)	5.8 (3.8)	6.9 (2.4)
Obese	**19.3 (8.0) a**	3.8 (3.8)	**12.7 (5.1) a**

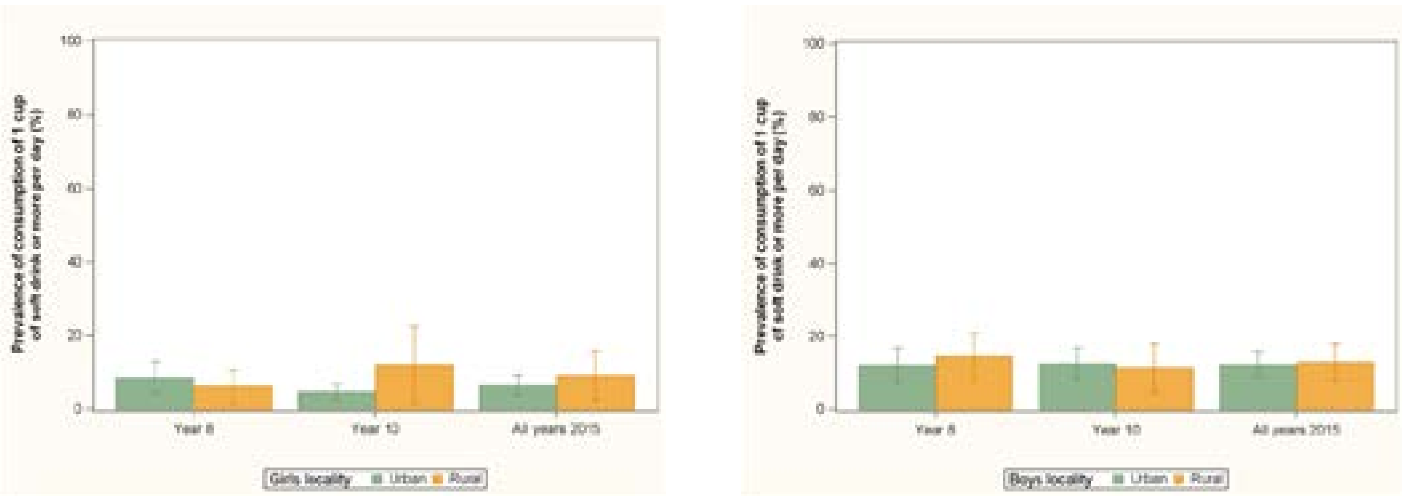
	2015		
	Year 8	**Year 10**	**All years**
BOYS			
Locality			
Urban (ref)	12.2 (2.3)	12.6 (2.1)	12.4 (1.7)
Rural	14.7 (3.2)	11.4 (3.2)	13.0 (2.5)
SES			
Low	**16.5 (3.5) a**	12.5 (3.1)	**14.4 (2.2) a**
Middle	13.2 (2.8)	15.0 (2.8)	**14.1 (2.1) a**
High (ref)	9.1 (2.5)	8.9 (2.5)	9.0 (1.8)
Cultural background			
English (ref)	12.5 (1.8)	11.9 (1.8)	12.2 (1.4)
European	**57.7 (25.3) a**	na	15.5 (11.7)
Middle Eastern	**28.3 (7.6) a**	5.2 (3.2)	16.0 (3.9)
Asian	7.9 (5.4)	13.7 (5.7)	11.3 (4.7)
BMI category			
Thin	10.3 (4.9)	15.1 (6.5)	12.6 (4.7)
Healthy weight (ref)	14.7 (2.5)	13.2 (2.0)	13.9 (1.8)
Overweight	8.4 (2.2)	7.1 (2.8)	**7.8 (1.6) a**
Obese	15.1 (6.8)	18.3 (8.7)	16.7 (5.9)

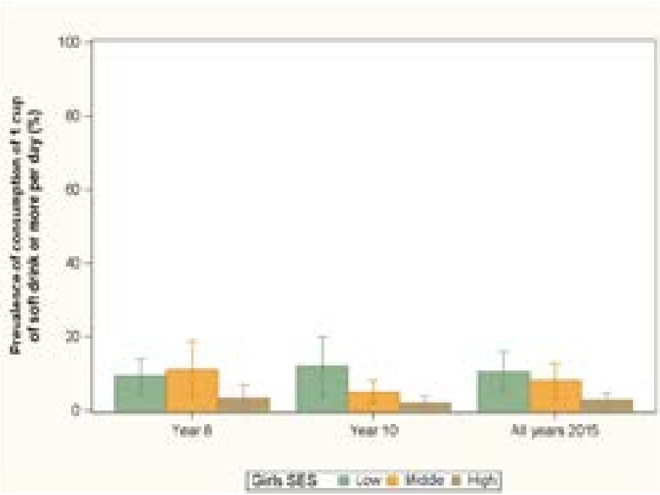
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

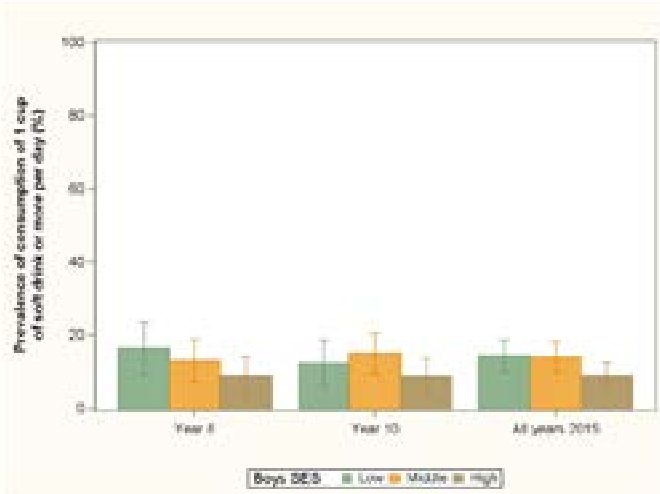
na *Indicates statistical significance could not be calculated due to low numbers.*

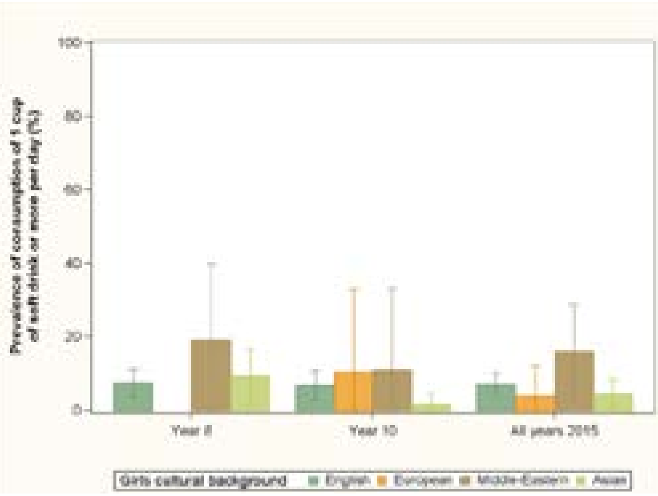
No letter means there was no statistical difference.

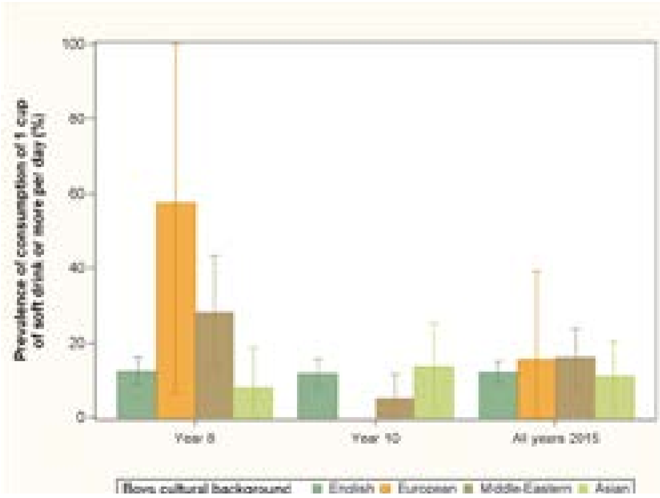
Figure 5.45 Prevalence of drinking one or more cups of soft drink daily among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

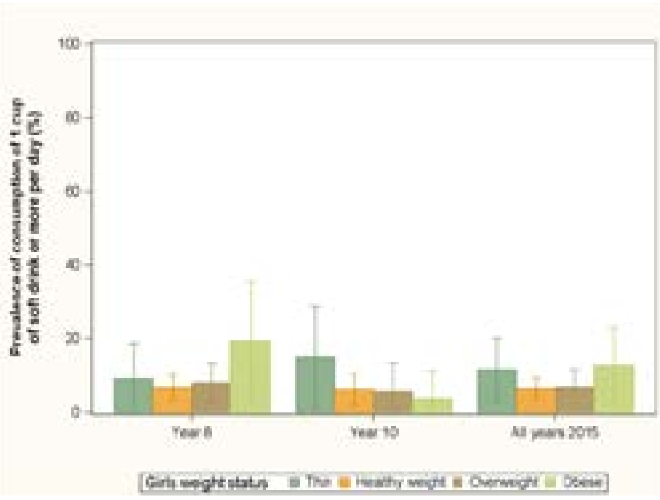


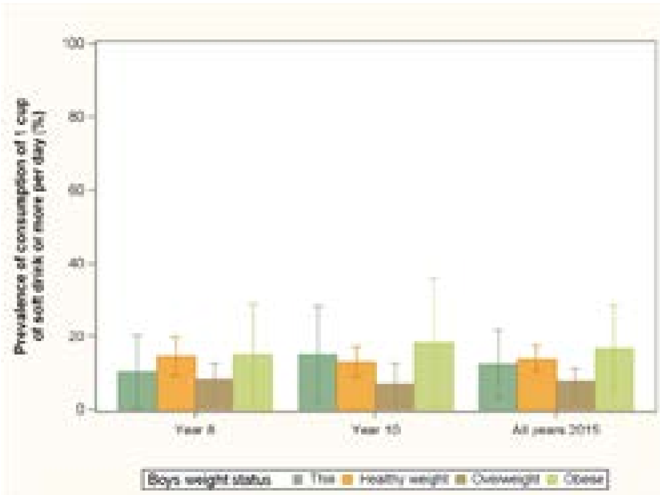

Prevalence of consumption of 1 cup of soft drink or more per day (%)
Year 8
Year 10
All years 2015
Girls SES Low Middle High


Prevalence of consumption of 1 cup of soft drink or more per day (%)
Year 8
Year 10
All years 2015
Boys SES Low Middle High


Prevalence of consumption of 1 cup of soft drink or more per day (%)
Year 8
Year 10
All years 2015
Girls cultural background English European Middle-Eastern Asian


Prevalence of consumption of 1 cup of soft drink or more per day (%)
Year 8
Year 10
All years 2015
Boys cultural background English European Middle-Eastern Asian


Prevalence of consumption of 1 cup of soft drink or more per day (%)
Year 8
Year 10
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Prevalence of consumption of 1 cup of soft drink or more per day (%)
Year 8
Year 10
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

DIET SOFT DRINK CONSUMPTION

Diet soft drinks or diet cordials are artificially-sweetened drinks that, apart from fluid, provide no nutritional value. Artificially-sweetened soft drinks are a lower kilojoule alternative to regular soft drinks, but overconsumption can lead to dental erosion and bone demineralisation, and may potentially lead to children developing a taste for sweet foods and drinks.[27,28]

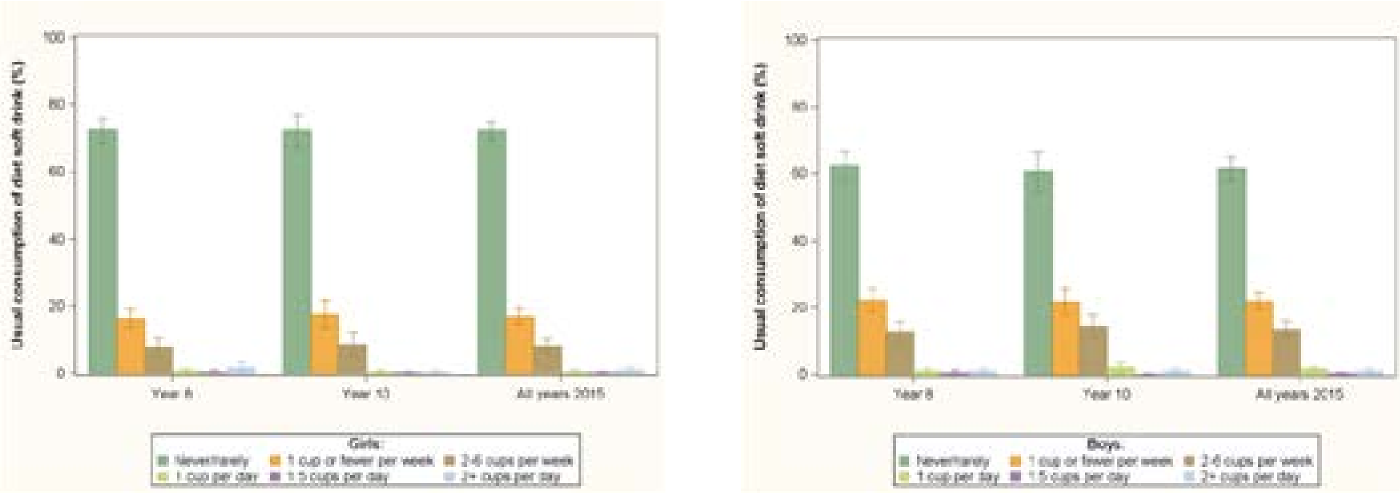
Table 5.46 and Figure 5.46 show the frequency that adolescents usually consumed diet soft drinks by sex and year group in 2015. Overall, 67% of adolescents never or rarely consumed diet soft drinks and 20% drank one or fewer cups of diet soft drink a week. The consumption of diet soft drinks appeared to be broadly consistent across year groups; however, apparently more girls (72%) never or rarely consumed diet soft drinks, compared with boys (62%).

Table 5.46 Usual consumption of diet soft drinks among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Never/rarely	67.4 (1.6)	66.5 (1.9)	66.9 (1.2)
1 cup or fewer per week	19.4 (1.3)	19.7 (1.4)	19.6 (0.9)
2-6 cups per week	10.4 (1.1)	11.6 (1.1)	11.0 (0.8)
1 cup per day	1.0 (0.3)	1.3 (0.4)	1.1 (0.3)
1.5 cups per day	0.5 (0.2)	0.2 (0.1)	0.4 (0.2)
≥2 cups per day	1.3 (0.5)	0.7 (0.3)	1.0 (0.3)
GIRLS			
Never/rarely	72.5 (1.8)	72.3 (2.3)	72.4 (1.3)
1 cup or fewer per week	16.4 (1.4)	17.6 (2.0)	17.0 (1.3)
2-6 cups per week	7.9 (1.4)	8.7 (1.7)	8.3 (1.1)
1 cup per day	0.9 (0.4)	0.6 (0.3)	0.7 (0.3)
1.5 cups per day	0.5 (0.4)	0.3 (0.2)	0.4 (0.2)
≥2 cups per day	1.8 (0.9)	0.5 (0.4)	1.1 (0.5)
BOYS			
Never/rarely	62.5 (2.2)	60.7 (2.9)	61.6 (1.8)
1 cup or fewer per week	22.3 (1.7)	21.8 (1.9)	22.0 (1.3)
2-6 cups per week	12.8 (1.5)	14.5 (1.7)	13.6 (1.2)
1 cup per day	1.0 (0.4)	2.0 (0.7)	1.5 (0.4)
1.5 cups per day	0.5 (0.3)	0.1 (0.1)	0.3 (0.2)
≥2 cups per day	0.9 (0.4)	0.9 (0.4)	0.9 (0.3)

Note: No significance testing was conducted.

Figure 5.46 Usual consumption of diet soft drinks among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SPORTS DRINK CONSUMPTION

Sports drinks are flavoured beverages that often contain carbohydrates, minerals, electrolytes (e.g., sodium, potassium, calcium, magnesium), and sometimes vitamins or other nutrients.[29] The consumption of sports drinks has been associated with weight gain in children and adolescents, and there is no evidence to suggest that sports drinks are beneficial when children have participated in short bouts of physical activity or to prevent dehydration among non-athletes.[29, 30] The Australian Dietary Guidelines recommend limiting the intake of sports drinks in adolescents because they contain added sugar;[4] however, there is some evidence that sports drinks are becoming very popular particularly among adolescent age groups in Australia.[6]

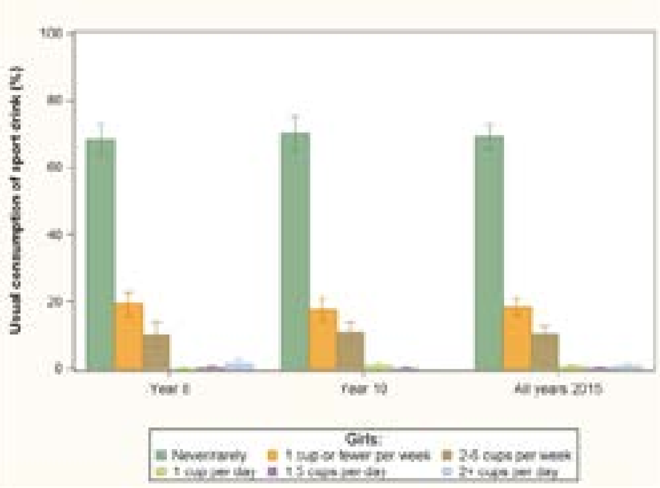
Table 5.47 and Figure 5.47 show the frequency that adolescents usually consumed sport drinks (e.g., Gatorade, Powerade) by sex and year group in 2015. Overall, 56% of adolescents never or rarely consumed sport drinks and 22% drank one or fewer cups of diet soft drink a week. More girls (69%) apparently never or rarely consumed sport drinks, compared with boys (43%).

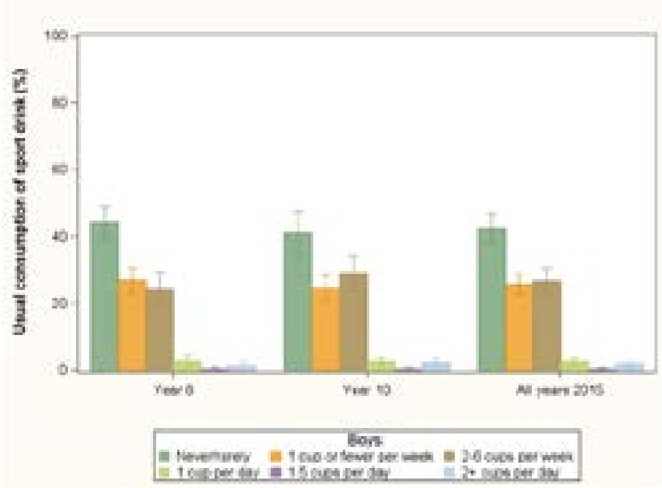
Table 5.47 Usual consumption of sport drinks among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Never/rarely	56.2 (2.3)	55.7 (2.9)	55.9 (2.2)
1 cup or fewer per week	23.2 (1.4)	21.1 (1.6)	22.1 (1.1)
2-6 cups per week	17.4 (1.6)	20.1 (1.9)	18.7 (1.4)
1 cup per day	1.4 (0.5)	1.8 (0.5)	1.6 (0.4)
1.5 cups per day	0.4 (0.2)	0.3 (0.1)	0.3 (0.1)
≥2 cups per day	1.4 (0.5)	1.1 (0.4)	1.3 (0.3)
GIRLS			
Never/rarely	68.5 (2.3)	70.2 (2.6)	69.3 (1.9)
1 cup or fewer per week	19.4 (1.8)	17.7 (1.8)	18.5 (1.2)
2-6 cups per week	10.2 (1.8)	11.0 (1.5)	10.6 (1.1)
1 cup per day	0.1 (0.1)	1.0 (0.5)	0.6 (0.3)
1.5 cups per day	0.3 (0.3)	0.1 (0.1)	0.2 (0.1)
≥2 cups per day	1.5 (0.9)	na	0.8 (0.4)
BOYS			
Never/rarely	44.3 (2.3)	41.1 (3.2)	42.7 (2.2)
1 cup or fewer per week	26.9 (1.9)	24.6 (1.9)	25.7 (1.5)
2-6 cups per week	24.4 (2.4)	29.2 (2.6)	26.8 (1.9)
1 cup per day	2.7 (0.9)	2.5 (0.7)	2.6 (0.7)
1.5 cups per day	0.4 (0.3)	0.4 (0.3)	0.4 (0.2)
≥2 cups per day	1.3 (0.7)	2.2 (0.7)	1.8 (0.5)

Note: No significance testing was conducted.
na *Indicates very low numbers.*

Figure 5.47 Usual consumption of sport drinks among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





ENERGY DRINK CONSUMPTION

Energy drinks are emerging as a potential public health threat.[31] Energy drinks are beverages that contain caffeine, sugar, taurine and various vitamins and herbal supplements, and are marketed to children and adolescents to 'improve energy'.[29] Energy drinks have no therapeutic benefit, and many ingredients found in these drinks are not well-studied, raising concerns for potentially serious adverse effects associated with children's consumption of them.[32, 33] The Australian Dietary Guidelines discourage adolescent consumption of energy drinks;[4] however there is some evidence that energy drinks are becoming very popular, particularly among adolescent age groups in Australia.[6, 27]

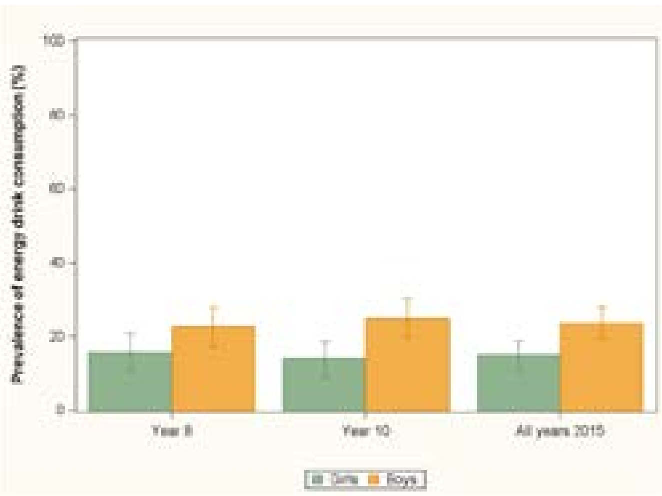
Table 5.48 and Figure 5.48 show the proportion of adolescents who usually consumed energy drinks in 2015. The prevalence of consuming energy drinks was low so consumption was dichotomised into '*does not drink energy drinks*' and '*does drink energy drinks*'. Overall 19% of adolescents consumed energy drinks. The consumption of energy drinks appeared to be broadly consistent across secondary school groups, however more boys (24%) reported they consumed energy drinks, compared with girls (15%).

Table 5.48 Usual consumption of energy drinks among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Does not drink energy drinks	80.8 (1.9)	80.6 (2.1)	80.7 (1.7)
Does drink energy drinks	19.2 (1.9)	19.4 (2.1)	19.3 (1.7)
GIRLS			
Does not drink energy drinks	84.2 (2.5)	86.0 (2.3)	85.1 (2.0)
Does drink energy drinks	15.8 (2.5)	14.0 (2.3)	14.9 (2.0)
BOYS			
Does not drink energy drinks	77.5 (2.6)	75.0 (2.6)	76.3 (2.1)
Does drink energy drinks	22.5 (2.6)	25.0 (2.6)	23.7 (2.1)

a *Indicates statistically significant difference at P < 0.05. Comparisons are between boys and girls within each year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 5.48 Usual consumption of energy drinks among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SUMMARY OF THE FOOD BEHAVIOURS OF ADOLESCENTS IN SECONDARY SCHOOL

The table below summarises the prevalence of indicators of diet in adolescents in secondary school.

Food indicator	Australian Dietary Guidelines	SPANS cut point	Prevalence (%, 95%CI)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
Nutritious foods: (Guideline 2 Enjoy a wide variety of nutritious foods from these five food groups every day: fruit, vegetables, grains/cereals, lean meats and poultry, fish, eggs, tofu, nuts, seeds, legumes/beans)					
Fruit	Adolescents age 11-16 years consume ≥ 2 serves/ day[4]	2 serves/day	73.8%	79.7% sig	**2015:** Overall, the proportion of adolescents meeting the recommendation for daily fruit intake was significantly higher among adolescents from rural areas, and significantly lower among adolescents from Asian cultural backgrounds **Change between 2010-15:** Overall, the proportion of adolescents meeting the recommendation for daily fruit intake significantly increased between 2010 and 2015. Within subgroups, meeting the recommendation for daily fruit intake significantly increased among adolescents from rural areas, low SES backgrounds, English-speaking backgrounds and those in the healthy weight BMI category; and significantly decreased among adolescents from Asian cultural backgrounds
Vegetables	Boys age 11-16 years consume ≥ 5½ serves/day and girls ≥ 5 serves[4]	5 serves/day	6.9%	10.5% sig	**2015:** Overall, the proportion of adolescents meeting the recommendation for daily vegetable intake was significantly higher among adolescents from rural areas **Change between 2010-15:** Overall, the proportion of adolescents meeting the daily vegetable recommendation significantly increased between 2010 and 2015. Within subgroups, meeting the recommendation for daily vegetable intake significantly increased among adolescents from urban areas, high SES backgrounds, English-speaking backgrounds and those in the healthy weight BMI category
Water	Drink plenty of water	2+ cups/day	n/a	65.9%	**2015:** Subgroup differences were not assessed
Milk	For children age 2+ years the preferred choices are reduced fat milks	1+ cup/day	n/a	41.5%	**2015:** Subgroup differences were not assessed
		Whole	52.3%	54.8%	
		Skim	30.0%	27.8%	
Red meat	No individual recommendation	3+ times/week	63.5%	58.6%	**2015:** Subgroup differences were not assessed

Food indicator	Australian Dietary Guidelines	SPANS cut point	Prevalence (%, 95%CI)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
Discretionary foods: (Guideline 3 Limit intake of foods high in saturated fat such as many biscuits, cakes, pastries, pies, processed meats, commercial burgers, pizza, fried foods, potato chips, crisps and other savoury snacks)					
Processed meat	These foods should be limited to once a week or less	3+ times/week	41.8%	44.4%	**2015:** Subgroup differences were not assessed
Fried potato products			13.5%	13.5%	
Potato crisps/salty snacks			41.2%	36.4%	
Snacks			55.6%	48.9%	
Confectionery			38.3%	31.2%	
Ice cream/ice blocks			36.0%	23.8%	
Fruit juice	Fruit juice should be consumed only occasionally and in small amounts because of the poor dietary fibre content and acidity. Whole fruit is preferable to juice	1+ cup/day	n/a	15.4%	**2015:** Subgroup differences were not assessed
Soft drinks	Limit drinks with added sugars, such as soft drinks, cordial, energy drinks and sports drinks	1+ cup/day	n/a	9.9%	**2015:** Overall, the proportion of adolescents consuming one or more cups of soft drink daily was significantly higher among adolescents from low and middle SES backgrounds
Flavoured water		Never	n/a	71.9%	**2015:** Subgroup differences were not assessed
Diet soft drinks			n/a	66.9%	
Sports drinks			n/a	55.9%	
Energy drinks			n/a	80.7%	

sig *Indicates statistically significant difference at P < 0.05.*

* *Comparisons are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category*

n/a *not available.*

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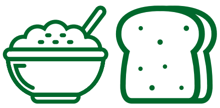
CHAPTER 6: DIETARY BEHAVIOURS

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5-16 YEARS



76%
of children and adolescents ate breakfast daily

12%
of children and adolescents ate dinner in front of the TV ≥5 days/week

23%
of children and adolescents purchased sugar-sweetened beverages from the school canteen

2015

- **76% of children and adolescents ate breakfast daily**
  - Children and adolescents from low (65%) and middle (76%) SES backgrounds were less likely to eat breakfast daily, compared with children and adolescents from high SES backgrounds (82%)
  - Children and adolescents from Middle Eastern (55%) and Asian (71%) cultural backgrounds were less likely to eat breakfast daily, compared with children and adolescents from English-speaking backgrounds (77%)
  - Children and adolescents in the overweight (68%) and obese (68%) BMI categories were less likely to eat breakfast daily, compared with children and adolescents in the healthy BMI category (77%)
- **12% of children and adolescents ate dinner in front of the TV ≥5 days/week**
  - Children and adolescents from rural areas (9%) were less likely to eat dinner in front of the TV ≥5 times/week, compared with children from urban areas (13%)
  - Children and adolescents from low SES (15%) and middle SES (12%) backgrounds were more likely to eat dinner in front of the TV ≥5 days/week, compared with children and adolescents from high SES backgrounds (9%)
  - Children and adolescents from Middle Eastern (19%) and Asian (19%) cultural backgrounds were more likely to eat dinner in front of the TV ≥5 days/week, compared with children and adolescents from English-speaking backgrounds (11%)
  - Children and adolescents in the obese (16%) BMI category were more likely to eat dinner in front of the TV ≥5 days/week, compared with children and adolescents in the healthy BMI category (11%)

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5-16 YEARS

23%
of children and adolescents ate takeaway meals or snacks from fast food outlets ≥1 time/week

Consumption of daily breakfast declined among children and adolescents from low SES backgrounds, from 72% in 2010 to 65% in 2015

Eating dinner in front of the TV ≥5 times/week declined among children and adolescents

- **23% of children and adolescents ate takeaway meals or snacks from fast food outlets ≥1 time/week**
  - Children and adolescents from rural areas (15%) were less likely to eat meals/snacks from fast food outlets ≥1 time/week, compared with children and adolescents from urban areas (23%)
  - Children and adolescents from low (26%) and middle (22%) SES backgrounds were more likely to eat meals/snacks from fast food outlets ≥1 time/week, compared with children and adolescents from high SES backgrounds (17%)
  - Children and adolescents from Middle Eastern (29%) and Asian (31%) cultural backgrounds were more likely to eat meals/snacks from fast food outlets ≥1 time/week, compared with children and adolescents from English-speaking backgrounds (20%)
  - Children and adolescents in the obese BMI category (27%) were more likely eat meals/ snacks from fast food outlets ≥1 time/week, compared with children and adolescents in the healthy BMI category (20%)
- **6% of parents usually offered their child or adolescent sweets as a reward for good behaviour**
- **12% of children and adolescents usually had soft drinks available at home**
- **30% of children and adolescents had unrestricted snacking in the home**
- **9% of children and adolescents bought lunch from the school canteen 3-5 days/week**

CONTEXT

The term 'dietary behaviours' refers to the number of concurrent, distinct behaviours that influence what, when, why, how and where children and adolescents eat. There are many factors that may influence child and adolescent dietary intake, including the types of foods and drinks available to them at home or at school, the foods eaten by peers or family members, and exposure to food marketing across multiple environments.[1-3] Parents play a crucial role in the development of child and adolescent food preferences and food intake, which may impact on child and adolescent weight in the long-term.[4]

SPANS provides data to report against indicators of home-based family behaviours that the evidence suggests are associated with poor eating habits and the development of unhealthy weight gain.[4] The questions ask about eating breakfast, eating dinner in front of the TV, using food as a reward for good behaviour, unrestricted snacking at home and the availability of soft drinks in the home. Questions about eating outside of the home are also asked regarding specific behaviours related to fast food consumption and lunch and drinks bought from the school canteen or school vending machines, which may influence the overall quality of child and adolescent diets.

This chapter reports on the dietary behaviours of children (i.e., those in Years K, 2, 4 and 6) and adolescents (i.e., in Years 8 and 10) sampled by year group and sex, and where appropriate, by socio-demographic characteristics and BMI category. Where available, the 2010 prevalence estimates on dietary behaviours are included for comparison. The findings are presented separately for children in primary school and adolescents in secondary school. The prevalence estimates (%) should be considered with respect to the associated standard errors (SE); a large standard error in proportion to the estimate indicates a less precise estimate.

PRIMARY SCHOOL

A methodological factor to consider in the interpretation of the findings on children in primary school is the difference in respondent. Parents reported on behalf of their child in year K, 2, 4, while children in Year 6 self-reported, which may reflect some of the notable differences in the reported prevalence of indicators of diet between younger primary years and Year 6. The combined prevalence in primary school will reflect these differences in data collection methods.

FREQUENCY OF EATING BREAKFAST

Daily breakfast consumption is associated with a healthier diet pattern, while persistent skipping of breakfast may have detrimental effects on cardio-metabolic health,[5] and irregular breakfast eating is associated with a higher body mass index and an increased probability of being overweight or obese.[6, 7] Currently, it is estimated that between 10-30% of young people globally skip breakfast,[8] with girls being more likely to do so, especially during their teenage years when they incorrectly perceive this practice to be a weight loss strategy.[9]

Children from disadvantaged backgrounds are more likely to skip breakfast.[10] More recently, evidence suggests that eating a healthy daily breakfast is associated with better academic outcomes in primary school age children.[11] The Australian Dietary Guidelines recommend children eat breakfast daily.[12] The SPANS survey questions allow an indication only of the frequency, not quality or quantity, of breakfast consumption.

Table 6.1 and Figure 6.1 show the frequency of eating breakfast among children in 2015 and in 2010, for comparison, by sex and year group. Overall, 84% of children ate breakfast every day and 2% never or rarely ate breakfast in 2015. The frequency of eating breakfast appeared to be broadly consistent across year groups. There appeared to be no change in the prevalence of children eating breakfast daily from 2010 to 2015.

Table 6.1 Usual frequency of consumption of breakfast among children in primary school by sex and year group in 2015 and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Never/rarely	2.6 (0.7)	1.8 (0.5)	1.9 (0.4)	3.4 (0.7)	2.4 (0.4)	1.4 (0.2)
Less than once/week	0.9 (0.3)	0.7 (0.3)	1.1 (0.3)	3.1 (0.6)	1.4 (0.2)	0.9 (0.2)
About 1 to 2 times/week	1.3 (0.4)	1.6 (0.4)	1.8 (0.5)	5.6 (1.0)	2.5 (0.4)	2.8 (0.4)
About 3 to 4 times/week	4.0 (0.9)	2.3 (0.5)	2.4 (0.5)	4.3 (0.6)	3.3 (0.4)	4.4 (0.5)
About 5 to 6 times/week	6.4 (1.0)	4.8 (0.6)	6.1 (0.7)	8.4 (0.9)	6.4 (0.5)	5.6 (0.4)
Every day	84.8 (2.1)	88.8 (1.5)	86.7 (1.5)	75.2 (1.8)	84.0 (1.4)	84.9 (1.2)
GIRLS						
Never/rarely	3.2 (0.8)	2.1 (0.6)	1.1 (0.4)	2.8 (1.1)	2.3 (0.5)	1.6 (0.4)
Less than once/week	1.0 (0.4)	0.6 (0.3)	1.4 (0.4)	2.5 (0.6)	1.4 (0.3)	1.1 (0.3)
About 1 to 2 times/week	1.4 (0.6)	2.1 (0.6)	2.3 (0.7)	5.0 (1.1)	2.6 (0.4)	2.7 (0.3)
About 3 to 4 times/week	3.9 (0.8)	2.8 (0.8)	3.0 (0.8)	4.7 (1.1)	3.6 (0.5)	4.2 (0.6)
About 5 to 6 times/week	7.9 (1.4)	5.2 (1.0)	5.7 (0.8)	7.8 (1.4)	6.6 (0.7)	5.6 (0.5)
Every day	82.6 (2.1)	87.3 (1.9)	86.5 (1.8)	77.2 (2.1)	83.4 (1.6)	84.7 (1.2)
BOYS						
Never/rarely	2.0 (0.7)	1.5 (0.6)	2.8 (0.8)	4.0 (1.0)	2.6 (0.4)	1.2 (0.3)
Less than once/week	0.9 (0.6)	0.8 (0.4)	0.8 (0.4)	3.7 (0.9)	1.5 (0.3)	0.8 (0.2)
About 1 to 2 times/week	1.3 (0.6)	1.1 (0.4)	1.1 (0.4)	6.2 (1.3)	2.4 (0.5)	2.8 (0.5)
About 3 to 4 times/week	4.1 (1.3)	1.8 (0.5)	1.7 (0.4)	3.9 (0.8)	2.9 (0.5)	4.5 (0.6)
About 5 to 6 times/week	4.8 (1.0)	4.4 (0.9)	6.5 (1.1)	9.0 (1.4)	6.1 (0.6)	5.7 (0.6)
Every day	87.0 (2.6)	90.4 (1.5)	87.1 (1.7)	73.2 (2.3)	84.5 (1.5)	85.1 (1.4)

Note: No significance testing was conducted.

Figure 6.1 Usual consumption of breakfast among children in primary school by sex and year group in 2015 (%, 95%CI)

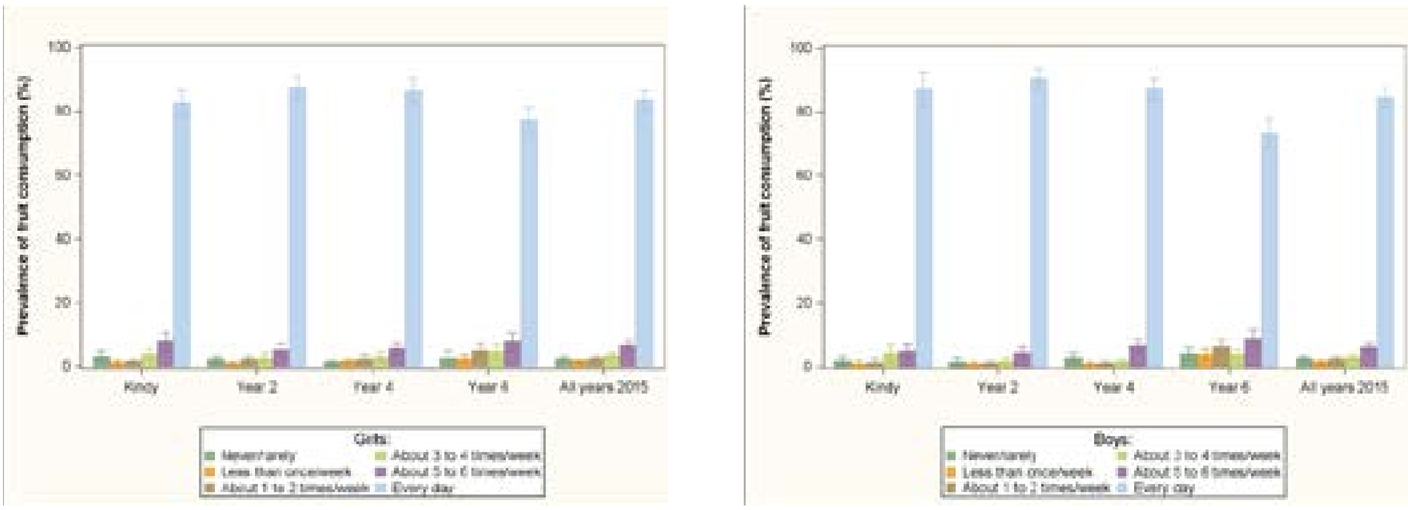


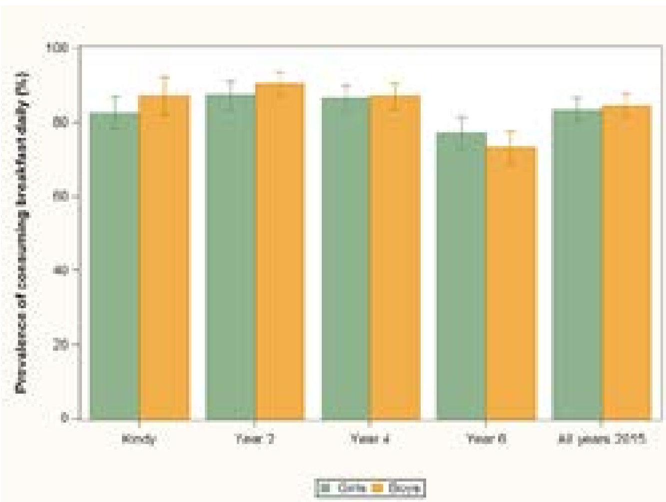
Table 6.2 and Figure 6.2 show the prevalence of eating breakfast daily among children in 2015 and in 2010 for comparison by sex and year group. Overall, 84% of children ate breakfast daily. There were no significant differences in the prevalence of daily breakfast consumption between boys and girls in 2015, nor were there any significant changes in the prevalence of eating daily breakfast between boys and girls between 2010 and 2015.

Table 6.2 Prevalence of eating breakfast daily among children in primary school by sex and year group in 2015 and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Eats breakfast daily	84.8 (2.1)	88.8 (1.5)	86.7(1.5)	75.2 (1.8)	84.0 (1.4)	84.9 (1.2)
Does not eat breakfast daily	15.2 (2.1)	11.2 (1.5)	13.3 (1.5)	24.8 (1.8)	16.0 (1.4)	15.1 (1.2)
GIRLS						
Eats breakfast daily	82.6 (2.1)	**17.4 (2.1) a**	86.5 (1.8)	77.2 (2.1)	83.4 (1.6)	84.7 (1.2)
Does not eat breakfast daily	17.4 (2.1)	12.7 (1.9)	13.5 (1.8)	22.8 (2.1)	16.6 (1.6)	15.3 (1.2)
BOYS						
Eats breakfast daily	87.0 (2.6)	90.4 (1.5)	87.1 (1.7)	73.2 (2.3)	84.5 (1.5)	85.1 (1.4)
Does not eat breakfast daily	13.0 (2.6)	9.6 (1.5)	12.9 (1.7)	26.8 (2.3)	15.5 (1.5)	14.9 (1.4)

a *Indicates statistically significant difference at P < 0.05. Comparisons are between boys and girls within each year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each category.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 6.2 Prevalence of eating breakfast daily among children in primary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 84% of children eat breakfast daily while one in seven (16%) reported that they do not eat breakfast daily. Table 6.3 and Figure 6.3 show the prevalence of eating breakfast daily among children by sex and year group and according to socio-demographic characteristics, and BMI category in 2015, and in 2010 for comparison.

LOCALITY

2015: Overall, the prevalence of eating breakfast daily was significantly higher among children from rural areas (87%), compared with children from urban areas (83%); and among girls from rural areas (87%), compared with girls from urban areas (82%).

Change between 2010-2015: There were no significant changes in prevalence of eating breakfast daily among urban and rural children between 2010 and in 2015.

Socio-economic status

2015: Overall, the prevalence of eating breakfast daily was significantly lower among children from low SES (74%), compared with high SES backgrounds (88%); and among girls from low SES (73%), compared with girls from high SES backgrounds (87%); and, among boys from low SES (76%), compared with boys from high SES backgrounds (89%).

Change between 2010-2015: The prevalence of eating breakfast daily significantly decreased among girls from low SES backgrounds, from 80% in 2010 to 73% in 2015.

Cultural background

2015: Overall, the prevalence of eating breakfast daily was significantly lower among children from European (74%), Middle Eastern (56%) and Asian (78%) cultural backgrounds compared with children from English-speaking backgrounds (86%). The prevalence was significantly lower among girls from Middle Eastern (59%) and Asian (74%) cultural backgrounds, compared with girls from English-speaking backgrounds (86%); and among boys from European (72%) and Middle Eastern (53%) cultural backgrounds, compared with boys from English-speaking backgrounds (86%).

Change between 2010-2015: Overall, the prevalence of eating breakfast daily significantly decreased among children from Middle Eastern cultural backgrounds, from 67% in 2010 to 56% in 2015. The prevalence significantly decreased among girls from Asian cultural backgrounds, from 83% in 2010 to 74% in 2015; and among boys from Middle Eastern cultural backgrounds, from 68% in 2010 to 53% in 2015.

Weight status

2015: Overall, the prevalence of eating breakfast daily was significantly lower among children in the overweight (80%) and obese (76%) BMI categories, compared with children in the healthy weight BMI category (86%). The prevalence was significantly lower among boys in the overweight (79%) and obese (76%) BMI categories compared with boys in the healthy weight BMI category (87%).

Change between 2010-2015: Overall, there were no significant changes in the proportion of children eating breakfast daily across BMI categories between 2010 and 2015.

Table 6.3 Prevalence of eating breakfast among children in primary school by sex and year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Locality						
Urban (ref)	83.3 (2.5)	87.7 (1.8)	85.9 (1.9)	74.5 (2.2)	83.0 (1.8)	84.6 (1.2)
Rural	**90.6 (1.8) a**	**92.8 (1.2) a**	89.5 (1.1)	77.3 (2.3)	**87.4 (1.1) a**	86.7 (3.7)
SES						
Low	**74.4 (4.1) a**	**79.0 (4.4) a**	**79.8 (3.2) a**	**63.6 (3.7) a**	**74.2 (3.1) a**	78.9 (1.9)
Middle	84.9 (4.0)	90.5 (1.5)	**85.5 (2.7) a**	80.2 (2.5)	85.2 (1.9)	87.4 (1.5)
High (ref)	89.3 (1.8)	91.8 (1.7)	91.2 (1.6)	76.6 (2.2)	87.6 (1.4)	87.3 (1.2)
Cultural background						
English-speaking (ref)	87.8 (2.0)	90.7 (1.1)	88.3 (1.2)	76.8 (1.5)	86.0 (1.1)	86.6 (1.0)
European	71.4 (11.6)	**78.4 (8.4) a**	71.1 (14.2)	73.4 (11.7)	**74.3 (4.8) a**	79.8 (6.3)
Middle Eastern	**68.0 (7.4) a**	**50.7 (6.4) a**	**58.5 (7.9) a**	**43.1 (8.7) a**	**55.7 (3.6) a**	**66.9 (3.1) b**
Asian	**66.1 (4.6) a**	91.5 (3.7)	88.1 (3.3)	71.7 (6.4)	**77.9 (2.0) a**	79.7 (2.2)
BMI category						
Thin	86.2 (4.9)	89.4 (3.8)	94.4 (2.5)	75.7 (5.4)	86.5 (2.6)	89.7 (1.8)
Healthy weight (ref)	85.8 (1.9)	91.0 (1.5)	87.5 (1.7)	77.2 (2.0)	85.5 (1.4)	86.7 (1.1)
Overweight	82.4 (4.1)	88.4 (2.8)	83.4 (2.8)	**69.6 (3.5) a**	**80.2 (1.8) a**	79.5 (2.1)
Obese	78.7 (8.7)	**74.2 (5.4) a**	81.1 (4.0)	69.5 (4.8)	**76.1 (3.3) a**	77.1 (3.2)
GIRLS						
Locality						
Urban (ref)	80.8 (2.5)	86.5 (2.3)	85.2 (2.3)	76.7 (2.6)	82.4 (1.9)	84.7 (1.2)
Rural	**89.9 (1.9) a**	90.5 (1.5)	**90.6 (1.2) a**	78.6 (1.7)	**87.4 (1.0) a**	84.5 (4.8)
SES						
Low	**70.5 (4.7) a**	**74.5 (5.4) a**	**78.8 (3.4) a**	**66.5 (4.8) a**	**72.5 (3.3) a**	**80.4 (1.9) b**
Middle	85.4 (3.4)	87.9 (2.2)	86.3 (3.3)	83.4 (3.1)	85.8 (2.0)	87.3 (2.0)
High (ref)	86.0 (2.3)	91.6 (2.1)	90.2 (1.9)	77.0 (3.1)	86.5 (1.7)	85.5 (1.5)
Cultural background						
English-speaking (ref)	86.9 (2.0)	88.6 (1.5)	88.4 (1.5)	78.8 (1.8)	85.7 (1.2)	86.0 (1.2)
European	64.9 (16.8)	74.7 (13.2)	82.3 (16.2)	84.9 (11.2)	75.9 (6.1)	80.7 (6.9)
Middle Eastern	**61.0 (11.5) a**	**60.6 (11.9) a**	**59.7 (9.2) a**	**52.0 (7.9) a**	**58.6 (6.3) a**	66.1 (4.8)
Asian	**63.9 (5.8) a**	89.1 (6.1)	81.9 (5.4)	67.4 (7.9)	**73.9 (3.1) a**	**82.6 (1.9) b**
BMI category						
Thin	84.7 (5.6)	92.1 (4.4)	92.7 (3.4)	83.3 (5.0)	87.9 (2.7)	89.4 (2.6)
Healthy weight (ref)	83.6 (2.3)	88.1 (2.3)	86.3 (2.2)	77.6 (2.6)	84.0 (1.8)	85.9 (1.3)
Overweight	76.2 (6.2)	91.1 (2.8)	85.4 (3.4)	72.5 (3.6)	81.7 (2.4)	80.4 (2.1)
Obese	74.5 (10.4)	**69.1 (8.4) a**	84.9 (4.8)	75.5 (5.4)	**76.1 (3.2) a**	79.7 (3.7)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
BOYS						
Locality						
Urban (ref)	85.9 (3.1)	89.1 (1.8)	86.7 (2.0)	72.2 (2.8)	83.7 (1.8)	84.6 (1.5)
Rural	91.2 (2.8)	**94.9 (1.7) a**	88.3 (2.7)	76.1 (3.6)	87.4 (1.6)	88.3 (3.2)
SES						
Low	**78.2 (4.6) a**	**82.9 (4.0) a**	**80.7 (4.0) a**	**61.0 (4.6) a**	**75.7 (3.1) a**	77.5 (2.5)
Middle	84.4 (5.9)	93.1 (1.8)	**84.6 (3.1) a**	77.2 (3.3)	84.6 (2.1)	87.6 (1.5)
High (ref)	92.5 (2.0)	92.1 (1.9)	92.1 (1.9)	76.1 (2.9)	88.8 (1.5)	89.0 (1.5)
Cultural background						
English-speaking (ref)	88.6 (2.8)	92.9 (1.3)	88.2 (1.6)	74.7 (2.2)	86.2 (1.3)	87.1 (1.2)
European	82.4 (16.7)	**81.0 (8.0) a**	**61.1 (18.9) a**	55.6 (23.2)	**72.4 (7.8) a**	78.8 (8.6)
Middle Eastern	**74.3 (5.2) a**	**38.6 (9.0) a**	**57.1 (7.6) a**	**34.7 (11.2) a**	**52.7 (4.5) a**	**67.5 (3.9) b**
Asian	**70.5 (6.8) a**	94.5 (4.2)	97.5 (2.3)	76.1 (9.9)	83.9 (3.6)	77.0 (3.7)
BMI category						
Thin	87.6 (5.8)	86.0 (7.1)	96.3 (2.6)	61.0 (9.7)	84.7 (4.1)	90.0 (3.0)
Healthy weight (ref)	88.0 (2.5)	93.9 (1.3)	88.6 (1.7)	76.8 (2.5)	87.0 (1.4)	87.3 (1.3)
Overweight	90.5 (5.1)	**84.8 (5.0) a**	81.1 (5.0)	**67.4 (4.6) a**	**78.5 (2.7) a**	78.6 (3.3)
Obese	83.4 (8.8)	**79.7 (6.8) a**	**77.2 (6.6) a**	63.0 (9.5)	**76.2 (5.1) a**	74.4 (3.8)

Ref = reference category for statistical analysis.

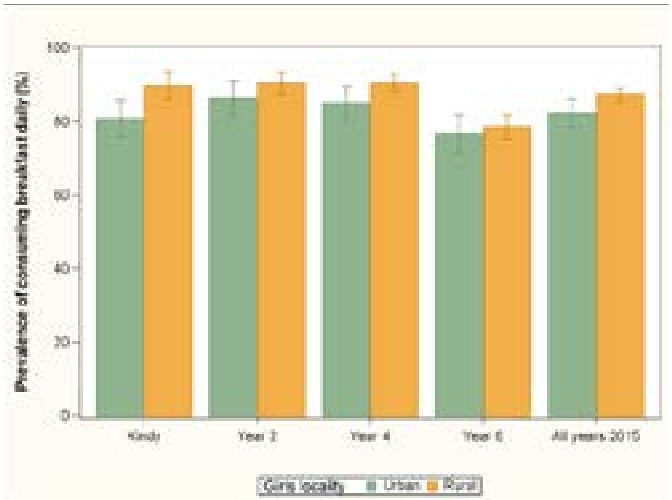
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds, compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

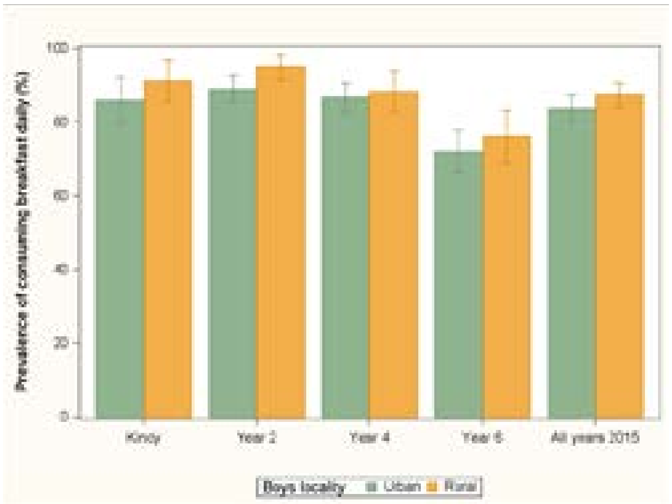
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

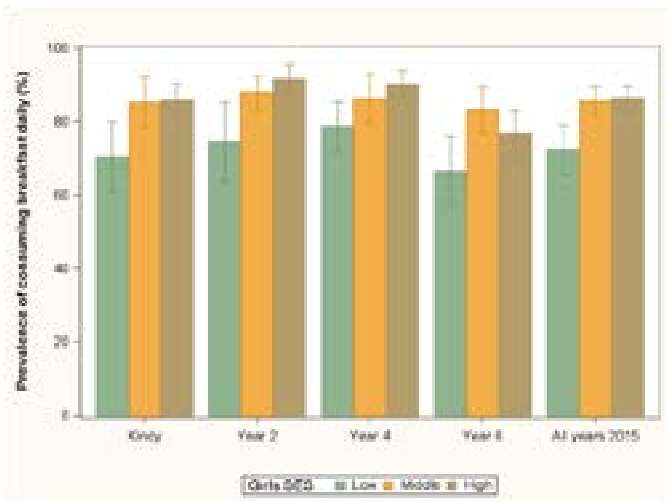
na *Indicates statistical significance could not be calculated due to low numbers.*

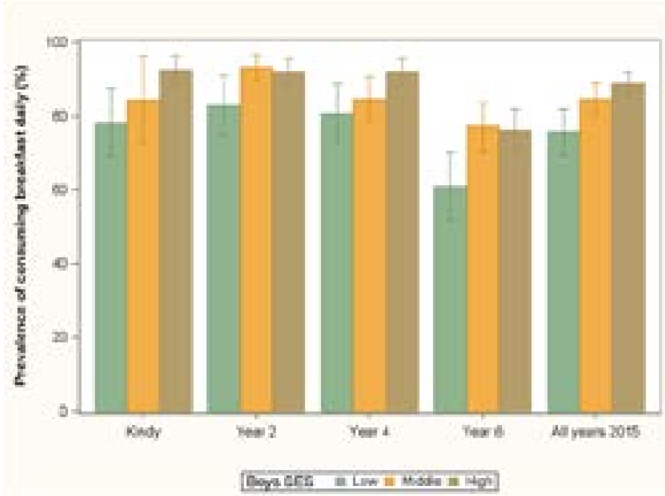
No letter means there was no statistical difference.

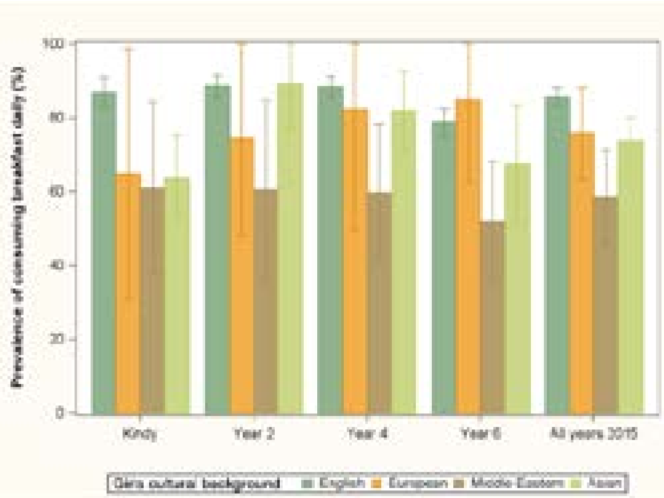
Figure 6.3 Prevalence of eating breakfast daily among children in primary school by year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

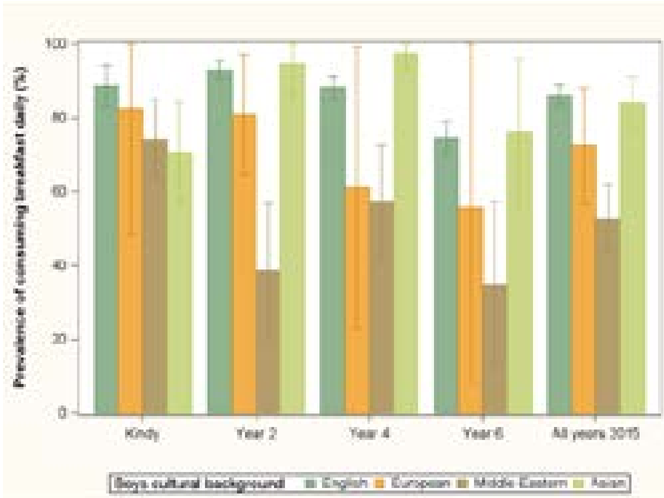


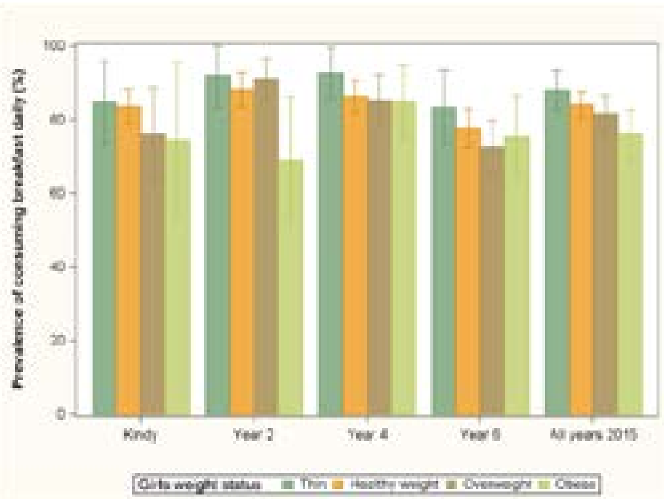


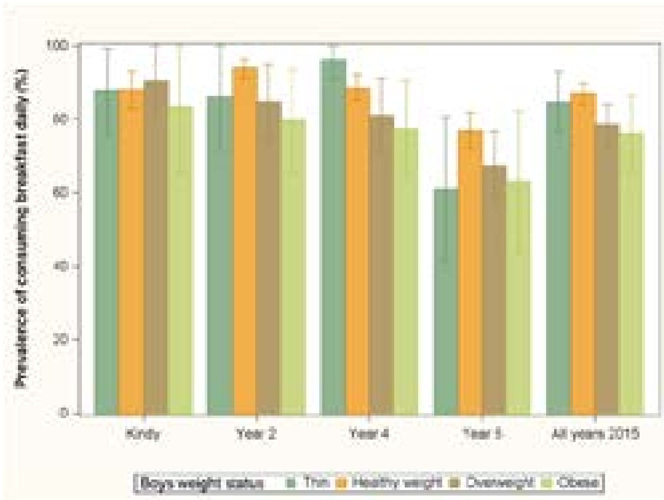

Prevalence of consuming breakfast daily (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls SES Low Middle High


Prevalence of consuming breakfast daily (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys SES Low Middle High


Prevalence of consuming breakfast daily (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls cultural background English European Middle Eastern Asian


Prevalence of consuming breakfast daily (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys cultural background English European Middle Eastern Asian


Prevalence of consuming breakfast daily (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Prevalence of consuming breakfast daily (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

EATING DINNER IN FRONT OF THE TV

Watching TV during mealtimes has been associated with poorer diet quality and with a higher body mass index.[13] The mechanisms driving these associations include the influence of targeted TV advertising of processed food and high caloric beverages at children and adolescents,[14] leading to requests for these items,[15] and the sedentary nature of sitting and watching TV.

Both watching TV and eating in front of TV are positively and independently associated with overweight.[16] Children consuming one or more dinners in front of the TV per week are more likely to have a higher BMI and the negative effect on young peoples' diet increases with frequency of consuming dinner in front of the TV.[17]

While there are no specific health-related recommendations on the frequency of eating meals in front of the TV, the evidence consistently shows that this eating behaviour is associated with a poor diet and unhealthy weight gain.[18]

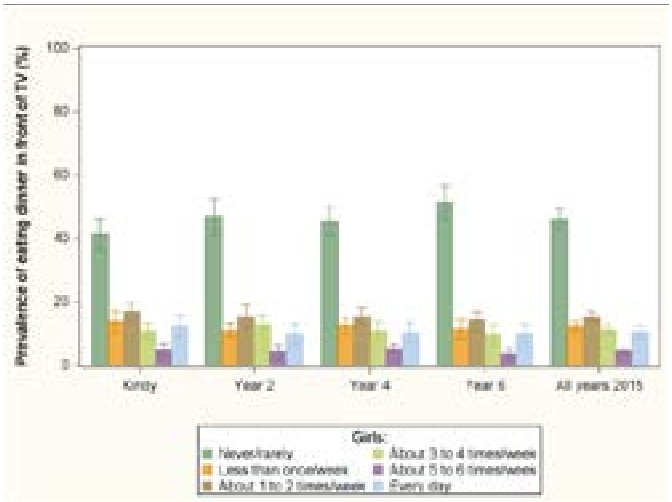
Table 6.4 and Figure 6.4 show the prevalence of eating dinner in front of the TV among children by sex and year group in 2015, and in 2010 for comparison. Overall, 11% of children ate dinner in front of the TV every day and 45% never or rarely ate dinner in front of the TV. The frequency of eating dinner in front of the TV appeared to be broadly consistent across year groups in 2015. There was an apparent increase in the overall prevalence of never or rarely eating dinner in front of the TV from 2010 to 2015.

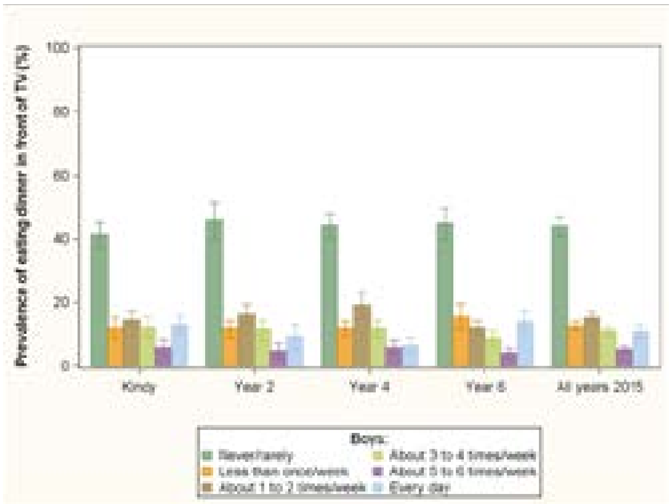
Table 6.4 Prevalence of eating dinner in front of the TV among children in primary school by sex and year group in 2015 and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Never/rarely	41.4 (1.8)	46.4 (2.3)	45.0 (1.4)	48.1 (1.9)	45.1 (1.3)	39.8 (1.2)
Less than once/week	12.9 (1.3)	11.4 (0.9)	12.3 (0.9)	13.6 (1.1)	12.5 (0.6)	12.5 (0.8)
About 1 to 2 times/week	15.8 (1.0)	15.9 (1.2)	17.3 (1.2)	13.2 (0.9)	15.6 (0.6)	14.9 (0.5)
About 3 to 4 times/week	11.6 (1.2)	12.2 (1.1)	11.3 (1.0)	9.1 (1.0)	11.1 (0.7)	13.3 (0.7)
About 5 to 6 times/week	5.5 (0.8)	4.5 (0.8)	5.7 (0.7)	4.0 (0.6)	4.9 (0.3)	5.9 (0.4)
Every day	12.8 (1.4)	9.5 (1.5)	8.5 (1.1)	12.1 (1.2)	10.8 (0.9)	13.5 (1.1)
GIRLS						
Never/rarely	41.4 (2.4)	46.8 (2.8)	45.6 (2.1)	51.3 (2.6)	46.1 (1.6)	39.9 (1.4)
Less than once/week	13.7 (1.8)	11.0 (1.1)	12.6 (1.2)	11.5 (1.5)	12.2 (0.8)	12.5 (1.0)
About 1 to 2 times/week	16.8 (1.4)	15.4 (1.8)	15.4 (1.4)	14.1 (1.5)	15.5 (0.8)	15.3 (0.7)
About 3 to 4 times/week	10.8 (1.2)	12.8 (1.5)	10.9 (1.4)	9.5 (1.6)	11.1 (0.8)	13.0 (0.7)
About 5 to 6 times/week	4.9 (0.9)	4.2 (1.1)	5.2 (0.7)	3.6 (0.9)	4.5 (0.5)	6.1 (0.6)
Every day	12.3 (1.7)	9.9 (1.6)	10.3 (1.6)	10.0 (1.4)	10.7 (1.0)	13.2 (1.2)
BOYS						
Never/rarely	41.4 (1.9)	45.9 (2.8)	44.3 (1.9)	44.9 (2.5)	44.0 (1.5)	39.7 (1.4)
Less than once/week	12.1 (1.7)	11.9 (1.4)	11.9 (1.2)	15.7 (2.0)	12.9 (0.8)	12.5 (1.1)
About 1 to 2 times/week	14.8 (1.3)	16.5 (1.5)	19.3 (2.1)	12.2 (1.2)	15.6 (0.8)	14.6 (0.7)
About 3 to 4 times/week	12.4 (1.6)	11.6 (1.6)	11.8 (1.4)	8.7 (1.2)	11.2 (0.8)	13.6 (1.0)
About 5 to 6 times/week	6.1 (1.2)	5.0 (1.2)	6.1 (1.1)	4.3 (0.8)	5.4 (0.5)	5.8 (0.6)
Every day	13.2 (1.5)	9.2 (2.1)	6.6 (1.2)	14.2 (1.6)	10.9 (1.1)	13.8 (1.2)

Note: No significance testing was conducted.

Figure 6.4 Prevalence of eating dinner in front of the TV among children in primary school by sex and year group in 2015 (%, 95%CI)





EATING DINNER IN FRONT OF THE TV FIVE OR MORE TIMES A WEEK

Approximately 16% of children ate dinner in front of the TV five or more times a week; this represents approximately 90,000 primary school age children in NSW.

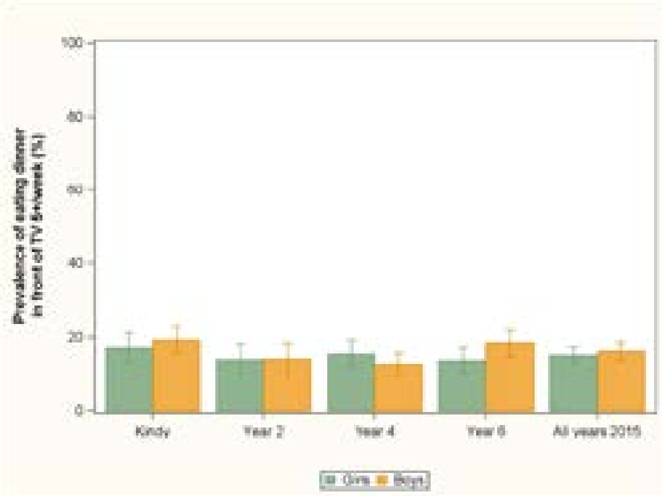
Table 6.5 and Figure 6.5 show the prevalence of eating dinner in front of the TV five or more times per week among children by sex and year group in 2015, and in 2010 for comparison. The prevalence significantly decreased among all children from 20% in 2010 to 16% in 2015; among girls from 19% in 2010 to 15% in 2015; and among boys from 20% in 2010 to 16% in 2015.

Table 6.5 Prevalence of eating dinner in front of the TV five or more times per week, among children in primary school by sex and year group in 2015 and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Dinner in front of TV ≥ 5/week	18.3 (1.5)	14.1 (1.7)	14.2 (1.3)	16.1 (1.3)	15.7 (1.0)	**19.5 (1.1) b**
Dinner in front of TV < 5/week	81.7 (1.5)	85.9 (1.7)	85.8 (1.3)	83.9 (1.3)	84.3 (1.0)	80.5 (1.1)
GIRLS						
Dinner in front of TV ≥ 5/week	17.2 (2.0)	14.0 (2.0)	15.6 (1.8)	13.7 (1.8)	15.2 (1.1)	**19.3 (1.3) b**
Dinner in front of TV < 5/week	82.8 (2.0)	86.0 (2.0)	84.4 (1.8)	86.3 (1.8)	84.8 (1.1)	80.7 (1.3)
BOYS						
Dinner in front of TV ≥ 5/week	19.3 (1.8)	14.1 (2.2)	12.7 (1.5)	18.4 (1.8)	16.3 (1.2)	**19.6 (1.3) b**
Dinner in front of TV < 5/week	80.7 (1.8)	85.9 (2.2)	87.3 (1.5)	81.6 (1.8)	83.7 (1.2)	80.4 (1.3)

a *Indicates statistically significant difference at P < 0.05. Comparisons are between boys and girls within each year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each category.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 6.5 Prevalence of eating dinner in front of the TV five or more times per week, among children in primary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

Table 6.6 and Figure 6.6 show the prevalence of eating dinner in front of the TV five or more times a week among children in 2015 and in 2010 for comparison, stratified by sex, year group, socio-demographic characteristics and BMI category.

Locality

2015: Overall, the prevalence of eating dinner in front of the TV five or more times a week was significantly lower among children from rural areas (13%), compared with children from urban areas (17%); and among girls from rural areas (12%), compared with girls from urban areas (16%).

Change between 2010-2015: Overall, the prevalence of eating dinner in front of the TV five or more times a week significantly decreased among children from urban areas, from 20% in 2010 to 17% in 2015.

Socio-economic status

2015: Overall, the prevalence of eating dinner in front of the TV five or more times a week was consistently significantly higher among children from low SES (21%) compared with children from high SES backgrounds (14%). The prevalence was significantly higher among girls from low SES (20%) compared with girls from high SES backgrounds (13%); and among boys from low SES (21%) compared with children from high SES backgrounds (15%).

Change between 2010-2015: Overall, the prevalence of eating dinner in front of the TV five or more times a week did not change significantly among children from different SES backgrounds between 2010 to 2015.

Cultural background

2015: Overall, the prevalence of eating dinner in front of the TV five or more times a week was significantly lower among children from European (6%), and significantly higher among children from Middle Eastern (22%) and Asian (23%) cultural backgrounds, compared with children form English-speaking backgrounds (15%). The prevalence was significantly higher among girls from Middle Eastern (21%) and Asian (24%) cultural backgrounds, compared with girls from English-speaking backgrounds (14%); and among boys from Middle Eastern (22%) cultural backgrounds, compared with boys from English-speaking backgrounds (16%). The prevalence was significantly lower among boys from European cultural backgrounds (5%), compared with boys from English-speaking backgrounds (16%).

Change between 2010-2015: Overall, the prevalence of eating dinner in front of the TV five or more times a week significantly decreased among children from English-speaking backgrounds from 18% in 2010 to 15% in 2015; and among children from Middle Eastern cultural backgrounds from 29% in 2010 to 22% in 2015. The prevalence significantly decreased among girls from English-speaking backgrounds from 18% in 2010 to 14% in 2015 and from Middle Eastern cultural backgrounds from 30% in 2010 to 21% in 2015; and among boys from European cultural backgrounds from 25% in 2010 to 5% in 2015.

Weight status

2015: Overall, the prevalence of eating dinner in front of the TV five or more times a week was significantly higher among children in the obese BMI category (21%), compared with children in the healthy weight category (15%).

Change between 2010-2015: Overall, the prevalence of eating dinner in front of the TV five or more times a week significantly decreased among children in the overweight BMI category from 22% in 2010 to 16% in 2015; and among boys in the obese BMI category from 33% in 2010 to 23% in 2015.

Table 6.6 Prevalence of eating dinner in front of the TV five or more times a week among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Locality						
Urban (ref)	19.9 (1.8)	14.9 (2.0)	15.0 (1.6)	16.1 (1.5)	16.6 (1.2)	**19.7 (1.1) b**
Rural	**11.8 (1.1) a**	10.7 (2.6)	11.5 (2.2)	15.8 (2.4)	**12.5 (1.6) a**	17.5 (4.9)
SES						
Low	21.2 (2.3)	**20.6 (5.0) a**	**20.7 (2.6) a**	**19.3 (2.5) a**	**20.5 (2.2) a**	23.5 (2.0)
Middle	14.8 (2.7)	13.4 (3.3)	14.1 (2.2)	17.6 (2.8)	15.0 (1.8)	18.3 (1.5)
High (ref)	19.3 (2.1)	11.6 (1.5)	11.0 (1.5)	12.9 (1.5)	14.0 (1.1)	17.0 (1.7)
Cultural background						
English-speaking (ref)	17.1 (1.5)	14.2 (1.9)	12.8 (1.2)	16.2 (1.4)	15.1 (1.0)	**18.3 (1.2) b**
European	7.2 (7.2)	5.6 (3.8)	6.9 (6.8)	4.4 (4.2)	**5.9 (2.4) a**	15.4 (8.1)
Middle Eastern	23.7 (4.8)	12.6 (4.5)	**33.0 (6.2) a**	17.0 (3.9)	**21.5 (2.9) a**	**28.7 (3.0) b**
Asian	**29.1 (4.7) a**	17.0 (4.3)	**23.1 (4.9) a**	16.0 (4.7)	**22.7 (2.6) a**	26.2 (2.5)
BMI category						
Thin	22.7 (4.8)	14.5 (5.1)	10.6 (3.1)	14.5 (3.5)	15.6 (2.4)	18.1 (2.5)
Healthy weight (ref)	17.5 (1.8)	13.0 (1.9)	13.7 (1.4)	15.7 (1.5)	15.1 (1.1)	18.0 (1.2)
Overweight	12.8 (3.6)	16.5 (3.6)	15.7 (3.1)	18.5 (2.8)	16.2 (2.1)	**21.5 (1.6) b**
Obese	**31.8 (6.2) a**	20.4 (5.3)	18.7 (4.6)	14.3 (3.7)	**21.2 (2.5) a**	27.5 (3.0)
GIRLS						
Locality						
Urban (ref)	18.6 (2.4)	15.0 (2.4)	17.0 (2.2)	13.2 (2.0)	16.0 (1.4)	19.3 (1.3)
Rural	**11.6 (1.2) a**	10.0 (2.5)	**10.7 (1.9) a**	15.6 (3.2)	**12.0 (1.2) a**	18.6 (5.4)
SES						
Low	22.2 (3.4)	19.5 (5.1)	**23.1 (4.3) a**	15.0 (2.7)	**20.0 (1.9) a**	24.4 (2.2)
Middle	14.4 (3.2)	14.4 (4.5)	15.1 (2.9)	16.5 (4.1)	15.1 (2.0)	17.2 (1.5)
High (ref)	17.0 (2.8)	11.7 (1.8)	12.3 (2.3)	10.6 (1.8)	13.0 (1.5)	16.9 (2.4)
Cultural background						
English-speaking (ref)	15.5 (2.1)	13.7 (2.3)	13.9 (1.5)	14.1 (1.8)	14.3 (1.1)	**18.0 (1.4) b**
European	11.5 (10.9)	13.2 (8.8)	na	na	6.8 (3.6)	6.5 (4.5)
Middle Eastern	**29.4 (5.8) a**	6.8 (3.1)	**38.8 (8.7) a**	9.5 (5.1)	**21.4 (3.4) a**	**30.2 (3.8) b**
Asian	**27.2 (6.0) a**	22.4 (7.1)	**24.4 (6.4) a**	14.3 (6.5)	**23.6 (3.2) a**	27.4 (2.8)
BMI category						
Thin	13.7 (5.5)	11.9 (7.3)	12.6 (5.1)	18.5 (4.9)	14.5 (2.8)	18.2 (3.3)
Healthy weight (ref)	16.2 (2.3)	12.4 (2.5)	15.1 (1.9)	13.4 (1.9)	14.3 (1.4)	18.2 (1.6)
Overweight	14.8 (5.4)	19.2 (4.1)	18.9 (4.5)	14.2 (4.0)	16.9 (2.3)	20.9 (2.1)
Obese	**38.9 (9.3) a**	17.0 (5.5)	14.0 (5.0)	9.0 (5.6)	19.7 (3.2)	21.9 (4.3)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
BOYS						
Locality						
Urban (ref)	21.2 (2.1)	14.9 (2.5)	12.8 (1.7)	19.3 (2.2)	17.3 (1.4)	20.1 (1.3)
Rural	**12.0 (2.3) a**	11.3 (3.4)	12.3 (3.4)	16.0 (2.7)	13.0 (2.2)	16.6 (4.7)
SES						
Low	20.3 (2.3)	21.6 (6.5)	**18.2 (3.9) a**	23.4 (4.5)	**20.9 (3.1) a**	22.7 (2.1)
Middle	15.2 (2.9)	12.3 (2.5)	13.0 (2.5)	18.5 (3.0)	14.9 (2.0)	19.3 (2.0)
High (ref)	21.6 (3.1)	11.5 (2.1)	9.6 (1.9)	15.5 (2.3)	15.0 (1.2)	17.0 (1.6)
Cultural background						
English-speaking (ref)	18.7 (1.8)	14.6 (2.1)	11.5 (1.6)	18.4 (1.8)	15.9 (1.2)	18.6 (1.3)
European	na	na	13.8 (13.0)	11.2 (10.1)	**4.9 (3.3) a**	**25.4 (14.4) b**
Middle Eastern	18.5 (6.0)	19.4 (8.2)	**25.9 (9.5) a**	23.9 (5.5)	**21.7 (3.0) a**	27.4 (4.1)
Asian	**33.1 (7.7) a**	9.9 (4.5)	21.4 (8.1)	17.6 (8.1)	21.3 (4.4)	25.2 (4.5)
BMI category						
Thin	31.6 (8.4)	17.8 (6.6)	8.4 (4.5)	6.8 (3.9)	16.9 (3.3)	18.1 (3.4)
Healthy weight (ref)	18.8 (2.3)	13.6 (2.6)	12.2 (1.9)	18.0 (2.0)	15.8 (1.4)	17.8 (1.3)
Overweight	10.2 (4.2)	13.0 (4.8)	12.2 (4.2)	21.9 (4.5)	15.5 (2.8)	22.2 (2.2)
Obese	23.7 (7.1)	24.0 (10.3)	**23.6 (7.2) a**	19.8 (5.5)	22.9 (3.8)	**33.1 (4.1) b**

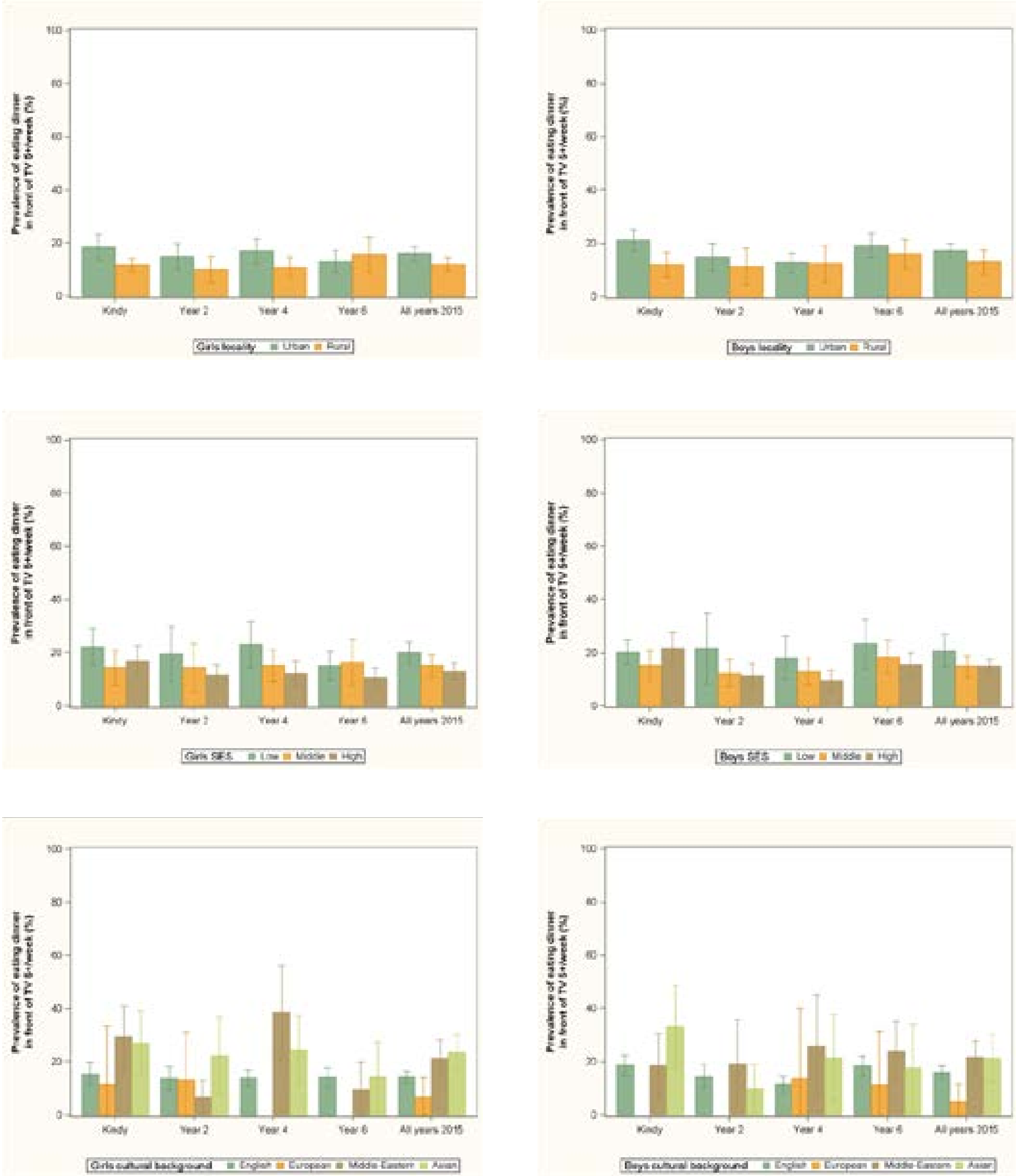
a *Indicates statistically significant difference at $P < 0.05$. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

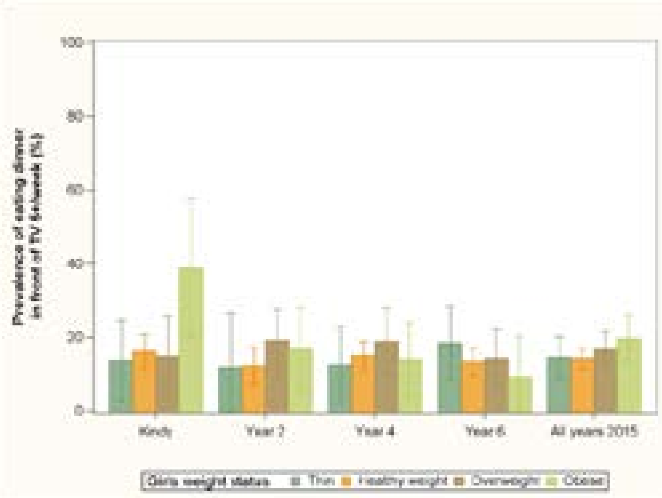
b *Indicates statistically significant difference at $P < 0.05$ between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

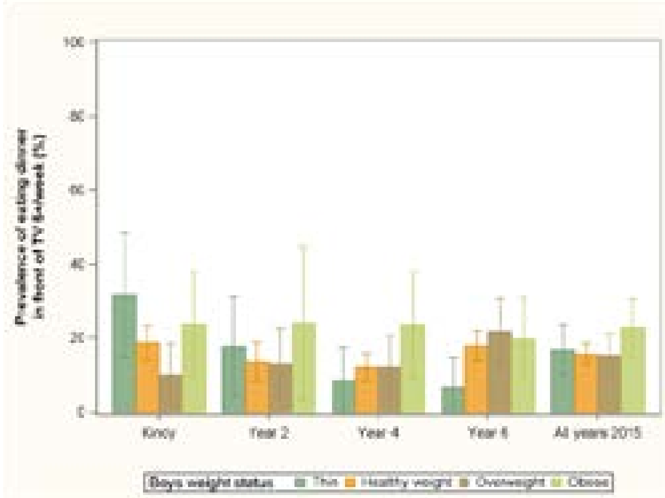
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 6.6 Prevalence of eating dinner in front of the TV five or more times a week, among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)







BEING OFFERED SWEETS AS A REWARD FOR GOOD BEHAVIOUR

Using food, sweets in particular, to reward children's behaviour (i.e., instrumental feeding) is a commonplace and effective strategy used by parents[19] despite evidence indicating that using food as a reward could be associated with long-term negative health consequences, including overeating and increased intake of unhealthy foods, shaping future eating habits.[20, 21] Sweets such as chocolate and confectionery contribute excess energy, fat and sugar to children's diets and provide few positive nutrients such as vitamins and minerals.[22] Furthermore, if sweets are given as a reward to children for eating their fruit or vegetables, children may learn to place less value on fruit and vegetables.[23] Australia does not have a specific health statement regarding this behaviour, but a position statement by the American Academy of Pediatrics states that *food should be used as nourishment, not as a reward or punishment.*[24]

The SPANS question on the use of sweets as a reward for good behaviour comes from the Parental Feeding Style Questionnaire (original Cronbach $\alpha = 0.67$, indicating acceptable internal consistency of the measure).[25]

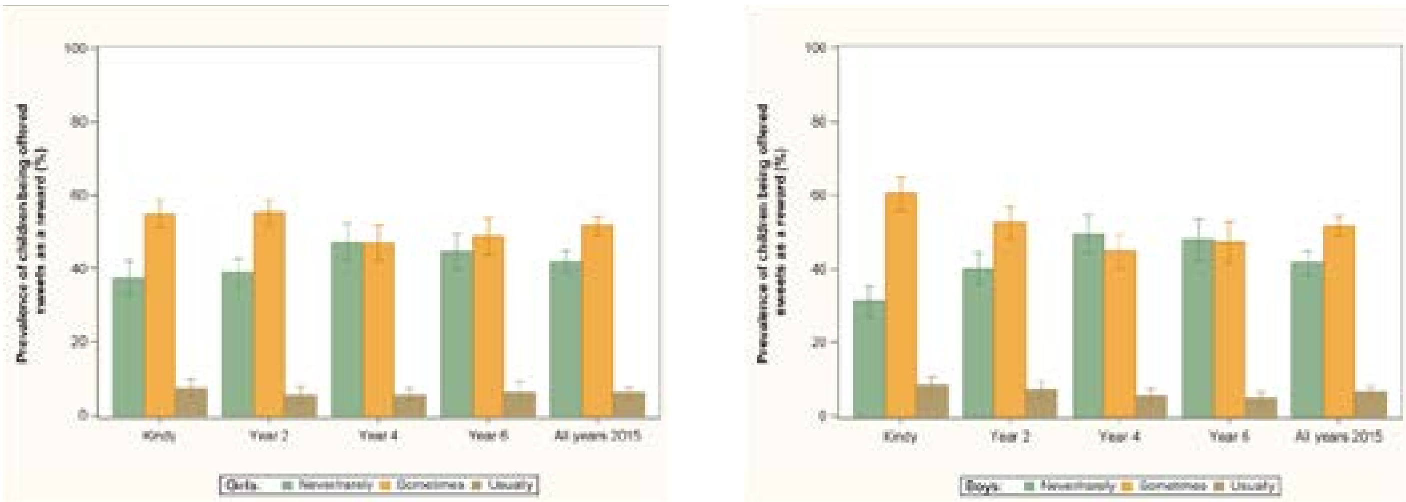
Table 6.7 and Figure 6.7 show the prevalence of parents' offering their child sweets as a reward for good behaviour, among children by sex and year group in 2015, and in 2010 for comparison. Overall, in 2015, 6% of children were 'usually' offered sweets for good behaviour and two in five children (42%) were 'never or rarely' offered sweets as a reward for good behaviour. The frequency of offering sweets as a reward for good behaviour appeared to be broadly consistent across year groups. There were no apparent changes in the overall prevalence of children being offered sweets as a reward for good behaviour between 2010 and 2015.

Table 6.7 Prevalence of being offered sweets as a reward for good behaviour among children in primary school by sex and year group in 2015 and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Never/rarely	34.4 (1.6)	39.6 (1.5)	48.4 (2.0)	46.3 (2.1)	41.9 (1.2)	40.4 (1.1)
Sometimes	57.7 (1.6)	54.0 (1.4)	46.0 (1.8)	48.1 (2.1)	51.7 (1.1)	50.0 (0.9)
Usually	7.9 (0.8)	6.4 (0.8)	5.6 (0.7)	5.6 (0.8)	6.4 (0.5)	9.6 (0.8)
GIRLS						
Never/rarely	37.6 (2.3)	39.1 (1.9)	47.2 (2.4)	44.7 (2.4)	42.0 (1.5)	37.7 (1.4)
Sometimes	55.0 (1.9)	55.3 (1.7)	47.1 (2.3)	48.9 (2.5)	51.8 (1.3)	51.8 (1.3)
Usually	7.4 (1.2)	5.6 (1.2)	5.6 (0.9)	6.3 (1.4)	6.3 (0.7)	10.5 (0.9)
BOYS						
Never/rarely	31.2 (2.1)	40.2 (2.2)	49.6 (2.5)	47.9 (2.8)	41.8 (1.6)	42.8 (1.3)
Sometimes	60.5 (2.2)	52.6 (2.2)	44.9 (2.2)	47.3 (2.8)	51.7 (1.4)	48.3 (1.1)
Usually	8.4 (1.2)	7.2 (1.2)	5.6 (0.9)	4.9 (0.9)	6.6 (0.7)	8.8 (1.0)

Note: No significance testing was conducted.

Figure 6.7 Prevalence of being offered sweets as a reward for good behaviour among children in primary school by sex and year group in 2015 (%, 95%CI)



SOFT DRINK AVAILABILITY IN THE HOME

The term 'soft drink' refers to carbonated, sugar-sweetened beverages. Soft drinks provide substantial energy with little or no nutritional value and reducing consumption of these sugar-sweetened beverages (SSBs) have been targeted in obesity prevention and public health nutrition.[26] Frequent soft drink consumption replaces healthier foods in the diet (such as milk) and may increase the risk of obesity, type 2 diabetes, dental caries and bone fractures.[27, 28]

National dietary intake data shows that over 60% of SSBs are consumed at home[29] and children who had soft drink available at home were almost five times as likely to be high consumers of soft drink.[30] Children are among the highest consumers of SSBs in Australia.[31] The Australian Dietary Guidelines recommends limiting intakes of [foods and] drinks containing added sugar.[12]

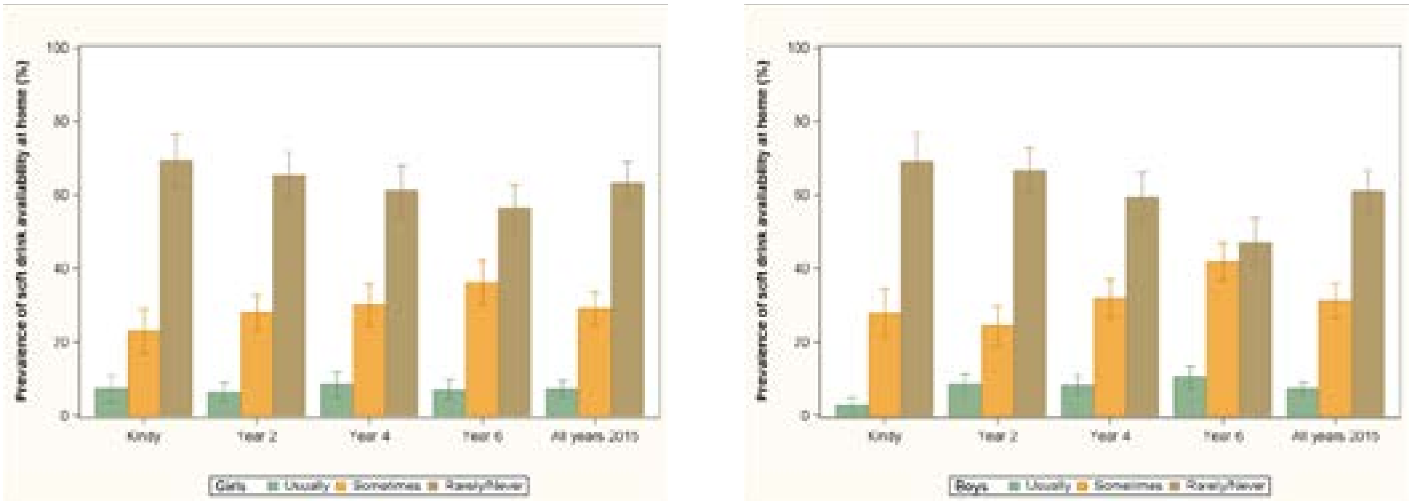
Table 6.8 and Figure 6.8 show the prevalence of soft drink availability in the home among primary school children stratified by sex and year group in 2015. Overall, 7% of children usually had soft drinks available in the home and 62% never or rarely had soft drinks available in the home in 2015. The prevalence of 'sometimes' having soft drinks available in the home appeared to be broadly consistent between boys and girls in 2015, but increased across year groups.

Table 6.8 Prevalence of soft drink availability in the home among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Usually	5.2 (1.2)	7.6 (1.0)	8.5 (1.3)	8.8 (1.2)	7.4 (0.9)
Sometimes	25.5 (2.7)	26.4 (2.1)	31.1 (2.2)	39.2 (2.5)	30.3 (2.1)
Rarely/never	69.3 (3.4)	66.0 (2.8)	60.4 (3.0)	51.9 (3.0)	62.3 (2.8)
GIRLS					
Usually	7.5 (1.8)	6.6 (1.3)	8.6 (1.7)	7.1 (1.3)	7.4 (1.1)
Sometimes	23.1 (3.0)	28.2 (2.4)	30.2 (2.8)	36.3 (3.0)	29.2 (2.2)
Rarely/never	69.4 (3.5)	65.3 (3.2)	61.3 (3.5)	56.6 (3.2)	63.4 (2.8)
BOYS					
Usually	2.9 (1.0)	8.6 (1.5)	8.4 (1.4)	10.6 (1.5)	7.5 (0.9)
Sometimes	27.9 (3.3)	24.5 (2.6)	32.1 (2.6)	42.1 (2.6)	31.5 (2.3)
Rarely/never	69.2 (3.9)	66.8 (3.1)	59.5 (3.3)	47.3 (3.3)	61.1 (2.9)

Note: No significance testing was conducted.

Figure 6.8 Prevalence of soft drink availability in the home among children in primary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately 7% of children in primary school usually have soft drinks available in the home. Table 6.9 and Figure 6.9 show the prevalence of usually having soft drinks available in the home among children stratified by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of usually having soft drinks available in the home between children from urban and rural areas.

Socio-economic status

2015: Overall, the prevalence of usually having soft drinks available in the home was significantly higher among children from low SES backgrounds (13%) compared with children from high SES backgrounds (5%). The prevalence was significantly higher among girls from low SES (14%), compared with girls from high SES backgrounds (5%); and among boys from low SES backgrounds (13%), compared with boys from high SES backgrounds (6%).

Cultural background

2015: Overall, the prevalence of usually having soft drinks available in the home was consistently and significantly higher among children from Middle Eastern cultural backgrounds (21%), compared with children from English-speaking backgrounds (7%). The prevalence was significantly higher among girls from Middle Eastern cultural backgrounds (23%), compared with girls from English-speaking backgrounds (6%); and among boys from Middle Eastern cultural backgrounds (20%), compared with boys from English-speaking backgrounds (7%).

Weight status

2015: Overall, the prevalence of usually having soft drinks available in the home was significantly higher among children in the overweight BMI category (10%) and obese BMI category (11%), compared with children in the healthy BMI category (7%). The prevalence was significantly higher among boys in the overweight BMI category (11%) and obese BMI category (14%), compared with boys in the healthy weight BMI category (6%).

Table 6.9 Prevalence of usually having soft drinks in the home among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Locality					
Urban (ref)	5.7 (1.5)	7.8 (1.2)	8.6 (1.5)	9.2 (1.3)	7.7 (1.1)
Rural	3.2 (1.2)	6.8 (1.8)	8.3 (1.7)	7.8 (3.4)	6.5 (1.2)
SES					
Low	**10.3 (2.5) a**	**13.0 (3.1) a**	**15.2 (2.7) a**	**14.7 (3.7)**	**13.2 (1.6) a**
Middle	5.7 (1.9)	7.7 (1.4)	7.6 (1.4)	5.6 (1.1)	6.6 (1.1)
High (ref)	2.6 (1.3)	5.0 (1.1)	5.8 (1.2)	8.8 (1.7)	5.3 (0.9)
Cultural background					
English-speaking (ref)	3.9 (1.1)	6.9 (1.0)	7.6 (1.1)	8.4 (1.2)	6.6 (0.8)
European	13.9 (10.2)	13.4 (7.1)	5.8 (5.3)	3.3 (3.4)	9.7 (3.4)
Middle Eastern	**15.4 (4.7) a**	**18.1 (5.0) a**	**28.0 (6.9) a**	**24.2 (7.1) a**	**21.3 (2.5) a**
Asian	**11.1 (4.5) a**	7.8 (2.8)	7.0 (2.7)	4.6 (2.4)	8.3 (2.2)
BMI category					
Thin	2.3 (2.2)	7.7 (3.7)	6.5 (2.7)	9.8 (3.7)	6.5 (1.7)
Healthy weight (ref)	5.2 (1.3)	6.3 (1.0)	8.0 (1.4)	7.2 (1.2)	6.6 (0.9)
Overweight	5.0 (2.2)	8.8 (2.1)	9.7 (2.5)	**13.2 (2.5) a**	**9.7 (1.4) a**
Obese	7.7 (4.0)	**13.9 (4.8) a**	12.2 (3.7)	11.1 (3.8)	**11.4 (1.9) a**
GIRLS					
Locality					
Urban (ref)	8.4 (2.2)	7.0 (1.5)	8.6 (2.0)	7.0 (1.3)	7.7 (1.3)
Rural	3.7 (1.9)	4.8 (1.8)	8.5 (3.1)	7.4 (4.1)	6.2 (1.6)
SES					
Low	**12.5 (3.0) a**	**11.0 (3.8) a**	**17.7 (4.5) a**	**13.5 (4.3)**	**13.7 (2.3) a**
Middle	8.3 (2.7)	7.9 (2.1)	7.3 (1.6)	3.4 (1.3)	6.7 (1.5)
High (ref)	4.6 (2.4)	3.9 (1.2)	5.2 (1.5)	7.1 (1.5)	5.1 (1.0)
Cultural background					
English-speaking (ref)	5.6 (1.7)	6.1 (1.3)	7.3 (1.5)	6.5 (1.4)	6.4 (0.9)
European	22.1 (14.8)	**22.8 (14.4) a**	na	5.4 (5.5)	13.9 (6.4)
Middle Eastern	**16.9 (4.6) a**	**13.4 (3.7) a**	**35.5 (9.8) a**	**23.7 (7.3) a**	**22.6 (3.4) a**
Asian	**14.8 (5.9) a**	1.5 (1.5)	5.6 (2.9)	4.2 (3.6)	8.4 (3.3)
BMI category					
Thin	na	11.7 (5.7)	8.1 (4.7)	11.2 (5.5)	7.9 (2.7)
Healthy weight (ref)	7.6 (2.1)	5.8 (1.3)	8.6 (2.0)	5.8 (1.1)	7.0 (1.2)
Overweight	6.9 (2.9)	6.3 (2.4)	9.1 (3.8)	**11.7 (2.7) a**	8.6 (1.7)
Obese	11.4 (5.3)	9.9 (3.8)	9.0 (5.1)	2.6 (2.6)	8.5 (1.8)

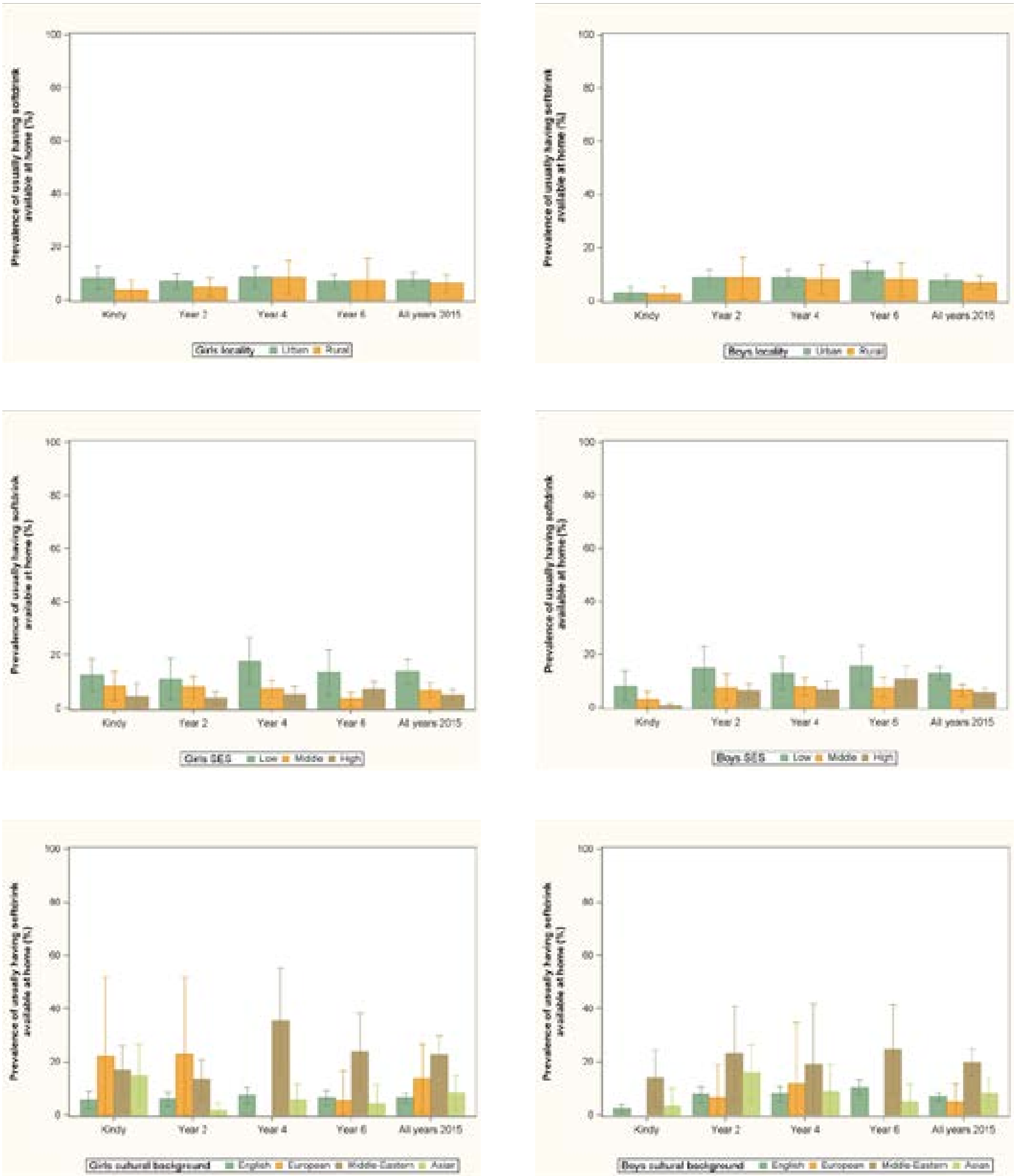
	2015				
	Year K	Year 2	Year 4	Year 6	All years
BOYS					
Locality					
Urban (ref)	3.0 (1.2)	8.7 (1.5)	8.6 (1.6)	11.4 (1.7)	7.7 (1.0)
Rural	2.6 (1.4)	8.6 (3.9)	8.1 (2.7)	8.1 (3.2)	6.9 (1.2)
SES					
Low	**8.1 (2.8) a**	**14.7 (4.1) a**	**12.8 (3.1) a**	**15.7 (3.7)**	**12.8 (1.3) a**
Middle	2.9 (1.5)	7.5 (2.5)	7.9 (1.6)	7.5 (1.9)	6.5 (1.1)
High (ref)	0.7 (0.5)	6.2 (1.4)	6.5 (1.7)	10.7 (2.4)	5.5 (0.9)
Cultural background					
English-speaking (ref)	2.3 (0.8)	7.7 (1.5)	7.9 (1.4)	10.3 (1.4)	6.9 (0.8)
European	na	6.5 (6.1)	11.7 (11.4)	na	5.0 (3.3)
Middle Eastern	**14.1 (5.2) a**	**23.0 (8.7) a**	**19.1 (11.4)**	**24.8 (8.4) a**	**19.9 (2.4) a**
Asian	3.4 (3.4)	15.9 (5.3)	8.9 (5.1)	4.9 (3.3)	8.1 (2.7)
BMI category					
Thin	4.7 (4.7)	2.7 (2.8)	4.7 (2.7)	7.1 (4.6)	4.7 (2.0)
Healthy weight (ref)	2.8 (1.0)	6.8 (1.4)	7.5 (1.6)	8.7 (1.8)	6.2 (0.9)
Overweight	2.6 (2.6)	11.9 (4.3)	10.3 (2.9)	14.4 (3.4)	**10.8 (1.8) a**
Obese	3.5 (3.5)	18.4 (7.8)	**15.8 (4.6) a**	**19.1 (6.0) a**	**14.4 (3.5) a**

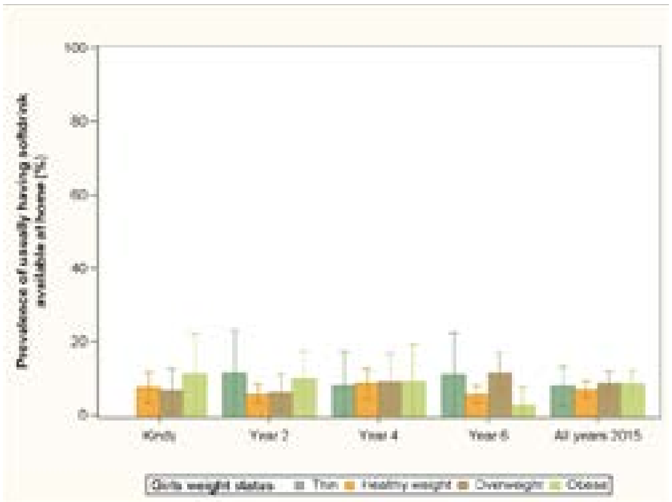
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background and; thin, overweight and obese compared with healthy weight BMI category.*

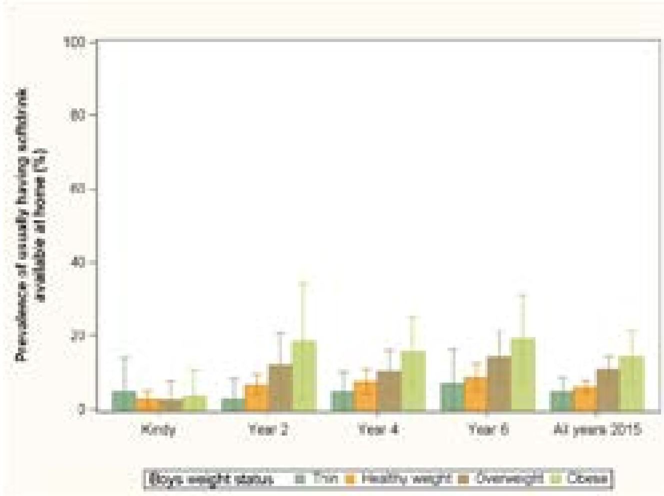
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 6.9 Prevalence of usually having soft drinks in the home among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)







UNRESTRICTED SNACKING AT HOME

Many factors shape a child's diet quality but the home food environment is a key influence, with approximately two thirds of children's daily food intake being eaten in the home.[32] The evidence in relation to parental control of snacking is equivocal. Some studies suggest that allowing young children high control over their own food choices (i.e., allowing children to get snacks without asking) may encourage unhealthy food consumption and have a deleterious effect on the quality of family meals,[33, 34] and other studies suggest that parental control is associated with increased healthy snack consumption among children.[35]

Snacks are largely comprised of salty foods, sweets and sweetened beverages and children often decide which foods they consume as snacks.[33] Given that snacking patterns track from childhood into adulthood, it is important to establish healthy eating patterns early in life.[36] The Australian Dietary Guidelines recommend limiting intake of foods high in saturated fat such as many biscuits and cakes, pastries, pies, processed meats, commercial hamburgers, pizza, fried foods, potato chips, crisps and other savoury snacks. Further, discretionary foods should be consumed only sometimes and in small amounts.[12]

Assessment of children's ad libitum or 'unrestricted' snacking at home was therefore included for the first time in SPANS in 2015 to determine the population prevalence of this eating behaviour among NSW children. The SPANS question on children's unrestricted snacking at home comes from a validated paediatric feeding questionnaire (original $\alpha = 0.69$, indicating acceptable internal consistency of the measure).[37,38]

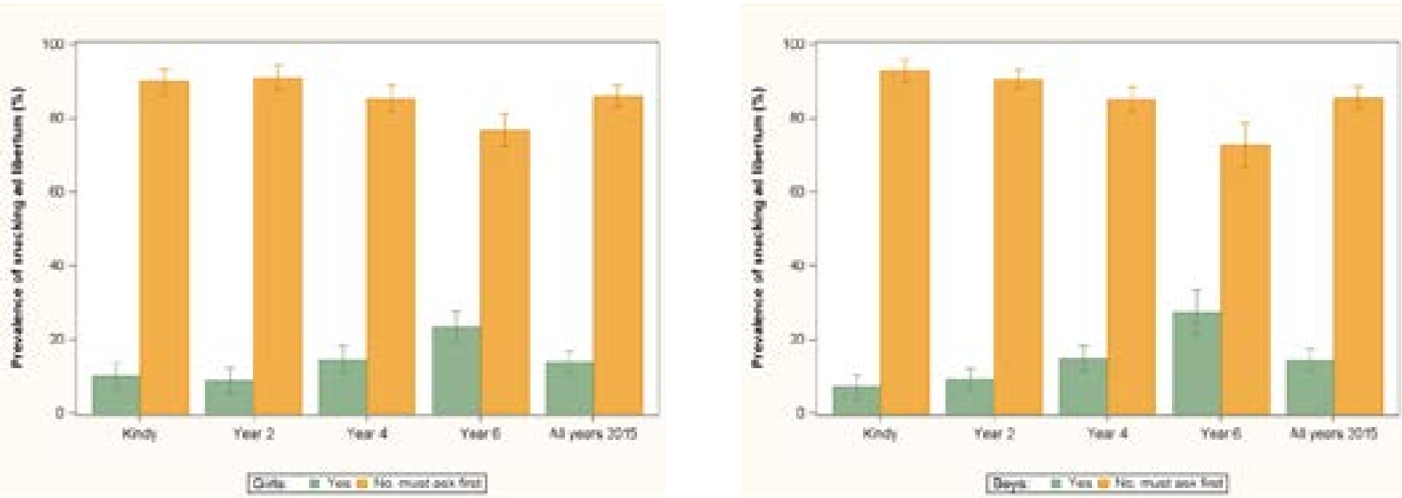
Table 6.10 and Figure 6.10 show the prevalence of unrestricted snacking at home on items such as lollies, ice cream, cakes, biscuits and soft drinks among children by sex and year group in 2015. Overall, 14% of children reported they had unrestricted snacking in the home. The prevalence appeared to be broadly consistent between boys and girls in each year group and increases with age.

Table 6.10 Prevalence of unrestricted snacking among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Yes, child can snack on junk food whenever they like	8.7 (1.5)	9.2 (1.1)	14.7 (1.5)	25.3 (2.1)	14.2 (1.3)
No, they have to ask me first	91.3 (1.5)	90.8 (1.1)	85.3 (1.5)	74.7 (2.1)	85.8 (1.3)
GIRLS					
Yes, child can snack on junk food whenever they like	10.2 (1.8)	9.0 (1.6)	14.6 (1.8)	23.3 (2.2)	14.0 (1.4)
No, they have to ask me first	89.8 (1.8)	91.0 (1.6)	85.4 (1.8)	76.7 (2.2)	86.0 (1.4)
BOYS					
Yes, child can snack on junk food whenever they like	7.1 (1.6)	9.4 (1.3)	14.9 (1.7)	27.4 (3.0)	14.4 (1.5)
No, they have to ask me first	92.9 (1.6)	90.6 (1.3)	85.1 (1.7)	72.6 (3.0)	85.6 (1.5)

a *Indicates statistically significant difference at $P < 0.05$. Comparisons are between boys and girls within each year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 6.10 Prevalence of unrestricted snacking among children in primary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that, overall, approximately one in seven (14%) children in primary school have unrestricted access to snacks in the home. Table 6.11 and Figure 6.11 show the prevalence of unrestricted snacking in the home among children in 2015 stratified by sex, year group, socio-demographic characteristics and BMI category.

Locality

2015: Overall, the prevalence was significantly lower among girls from rural areas (8%), compared with girls from urban areas (16%).

Socio-economic status

2015: Overall, the prevalence of unrestricted snacking in the home was significantly higher among children from low SES (24%), compared with children from high SES backgrounds (11%). The prevalence was significantly higher among girls from low SES (23%), compared with girls from high SES backgrounds (11%); and among boys from low SES backgrounds (25%), compared with boys from high SES backgrounds (10%).

Cultural background

2015: Overall, the prevalence of unrestricted snacking in the home was significantly higher among children from Middle Eastern cultural backgrounds (34%) and children from Asian cultural backgrounds (21%), compared with children from English-speaking backgrounds (13%). The prevalence was significantly higher among girls from Middle Eastern cultural backgrounds (35%) and from Asian cultural backgrounds (23%), compared with girls from English-speaking backgrounds (12%); and among boys from Middle Eastern cultural backgrounds (34%), compared with boys from English-speaking backgrounds (13%).

Weight status

2015: Overall, the prevalence of unrestricted snacking in the home was significantly higher among children in the obese BMI category (20%), compared with children in the healthy BMI category (14%). The prevalence was consistently and significantly higher among boys in the obese BMI category (27%), compared with boys in the healthy weight BMI category (13%).

Table 6.11 Prevalence of unrestricted snacking among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015				
	Year K	**Year 2**	**Year 4**	**Year 6**	**All years**
ALL					
Locality					
Urban (ref)	9.4 (1.8)	9.8 (1.3)	15.5 (1.8)	26.8 (2.7)	14.9 (1.6)
Rural	5.7 (1.8)	6.9 (1.9)	12.5 (1.2)	20.6 (2.1)	11.5 (1.3)
SES					
Low	**20.1 (4.2) a**	**15.4 (2.8) a**	**24.6 (3.2) a**	**37.2 (4.2) a**	**24.2 (2.8) a**
Middle	6.8 (1.2)	8.6 (1.5)	13.4 (1.8)	21.9 (2.4)	12.7 (1.1)
High (ref)	4.8 (1.0)	7.0 (1.1)	10.9 (1.6)	22.2 (2.9)	10.5 (1.2)
Cultural background					
English-speaking (ref)	6.5 (1.0)	8.0 (0.9)	12.9 (1.2)	24.1 (2.0)	12.6 (1.0)
European	9.8 (9.5)	4.9 (4.6)	19.5 (8.9)	33.4 (12.0)	15.7 (4.7)
Middle Eastern	**36.9 (5.8) a**	**30.8 (4.2) a**	**37.6 (5.8) a**	**32.1 (4.6) a**	**34.4 (3.0) a**
Asian	**16.3 (4.7) a**	**13.8 (3.8) a**	20.9 (4.8)	**39.9 (8.3) a**	**20.7 (3.5) a**
BMI category					
Thin	12.5 (5.0)	6.2 (2.7)	14.3 (3.7)	30.5 (5.2)	16.1 (2.5)
Healthy weight (ref)	8.3 (1.2)	8.4 (1.1)	14.9 (1.6)	24.6 (2.5)	13.6 (1.3)
Overweight	**3.6 (1.7) a**	7.6 (2.5)	10.3 (2.0)	27.4 (3.3)	13.7 (1.6)
Obese	**20.4 (9.6) a**	**16.6 (4.4) a**	**22.7 (4.4) a**	20.8 (4.7)	**20.1 (3.5) a**
GIRLS					
Locality					
Urban (ref)	11.5 (2.1)	10.0 (2.0)	16.4 (2.0)	25.6 (2.6)	15.5 (1.6)
Rural	**4.9 (2.0) a**	4.7 (1.8)	**8.7 (2.0) a**	**15.2 (3.0) a**	**8.4 (1.4) a**
SES					
Low	**20.8 (5.0) a**	**17.4 (4.9) a**	**24.3 (5.2) a**	30.6 (4.9)	**23.2 (3.8) a**
Middle	8.8 (2.2)	7.9 (2.5)	13.2 (2.4)	20.9 (3.7)	12.7 (1.5)
High (ref)	6.4 (1.6)	6.7 (1.4)	11.1 (1.8)	21.7 (2.7)	10.9 (1.1)
Cultural background					
English-speaking (ref)	7.4 (1.4)	7.4 (1.4)	12.8 (1.5)	21.5 (2.1)	12.1 (1.1)
European	15.5 (14.1)	11.7 (11.2)	na	33.1 (14.0)	17.0 (7.6)
Middle Eastern	**33.7 (6.8) a**	**26.5 (5.3) a**	**39.1 (4.6) a**	38.9 (12.4)	**34.5 (2.7) a**
Asian	**21.4 (5.8) a**	**16.7 (4.4) a**	21.1 (6.3)	**45.1 (10.0) a**	**23.4 (4.0) a**
BMI category					
Thin	14.6 (6.0)	7.4 (3.6)	13.3 (5.6)	26.4 (6.6)	16.3 (2.8)
Healthy weight (ref)	10.9 (1.7)	7.9 (1.6)	16.1 (2.2)	23.9 (2.6)	14.3 (1.5)
Overweight	**2.3 (1.6) a**	10.2 (4.5)	**7.9 (2.3) a**	23.6 (4.1)	11.4 (1.9)
Obese	14.4 (8.3)	9.8 (4.4)	17.8 (4.9)	11.1 (4.6)	13.5 (3.2)

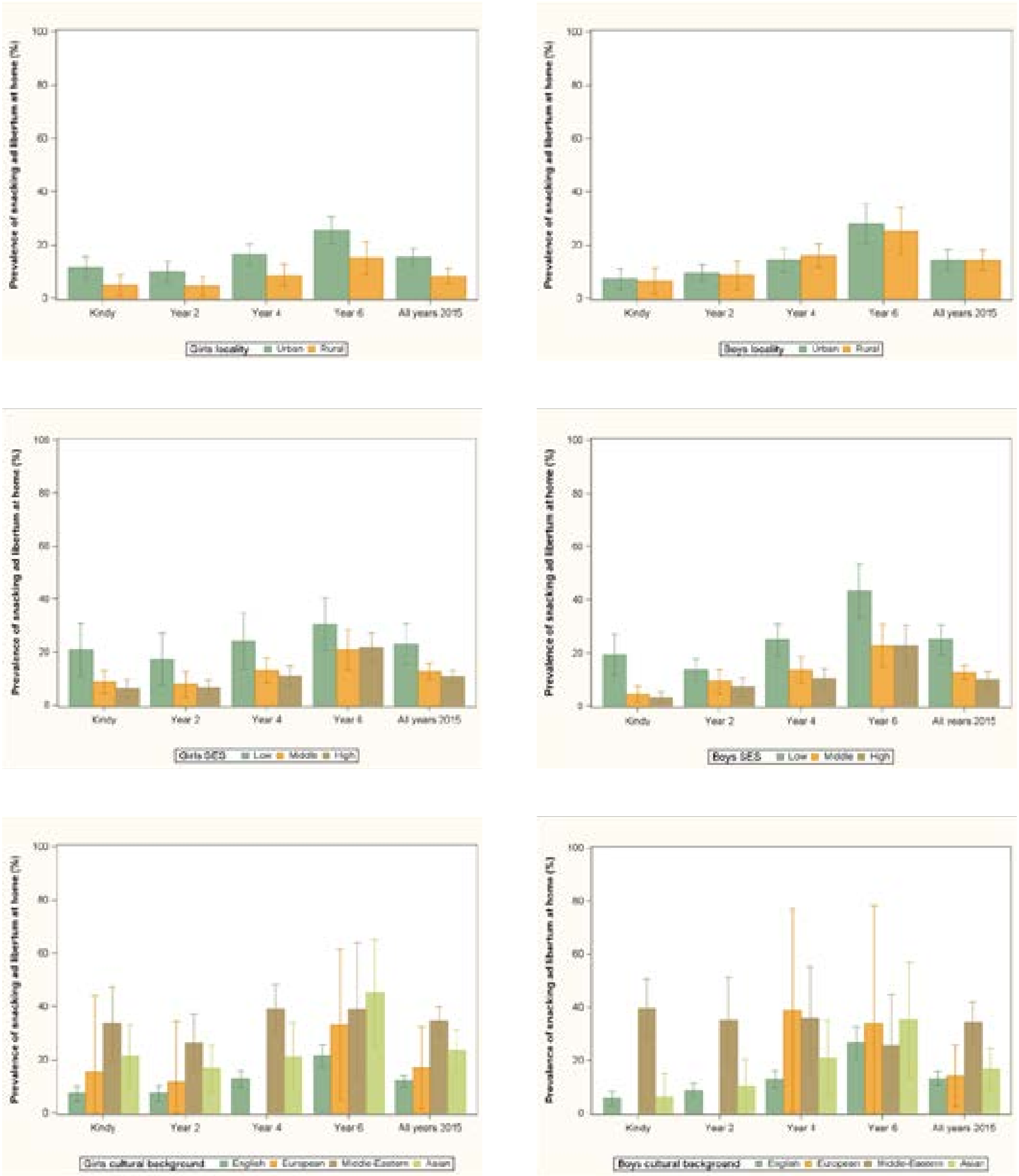
	2015				
	Year K	Year 2	Year 4	Year 6	All years
BOYS					
Locality					
Urban (ref)	7.3 (1.9)	9.6 (1.5)	14.5 (2.1)	28.0 (3.7)	14.4 (1.9)
Rural	6.4 (2.4)	8.9 (2.6)	16.1 (2.2)	25.4 (4.3)	14.4 (1.8)
SES					
Low	**19.5 (3.8) a**	**13.7 (2.0) a**	**24.9 (3.0) a**	**43.3 (5.1) a**	**25.1 (2.8) a**
Middle	4.5 (1.5)	9.3 (2.2)	13.6 (2.5)	22.7 (4.0)	12.8 (1.2)
High (ref)	3.3 (1.1)	7.3 (1.8)	10.6 (1.8)	22.7 (3.9)	10.1 (1.5)
Cultural background					
English-speaking (ref)	5.7 (1.3)	8.6 (1.3)	13.0 (1.5)	26.7 (3.0)	13.2 (1.3)
European	na	na	**38.9 (18.9) a**	33.9 (21.9)	14.2 (5.8)
Middle Eastern	**39.6 (5.5) a**	**35.1 (8.0) a**	**35.7 (9.6) a**	**25.7 (9.5)**	**34.4 (3.7) a**
Asian	6.2 (4.4)	10.1 (5.1)	20.8 (7.1)	35.2 (10.8)	16.7 (3.8)
BMI category					
Thin	10.2 (6.4)	4.8 (4.5)	15.5 (5.6)	39.2 (12.2)	15.8 (3.7)
Healthy weight (ref)	5.8 (1.4)	8.9 (1.6)	13.7 (2.0)	25.4 (3.2)	12.9 (1.5)
Overweight	5.3 (2.9)	4.2 (2.5)	13.0 (3.4)	30.4 (4.7)	16.1 (2.2)
Obese	**27.1 (12.8) a**	**24.2 (6.6) a**	**28.3 (8.3) a**	29.9 (6.4)	**27.3 (4.8) a**

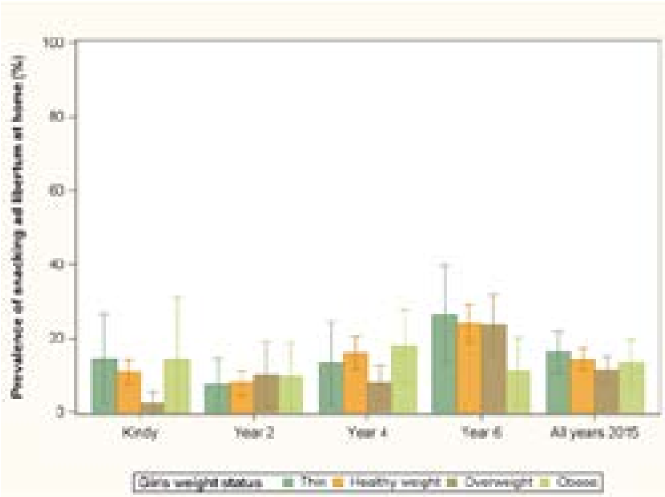
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

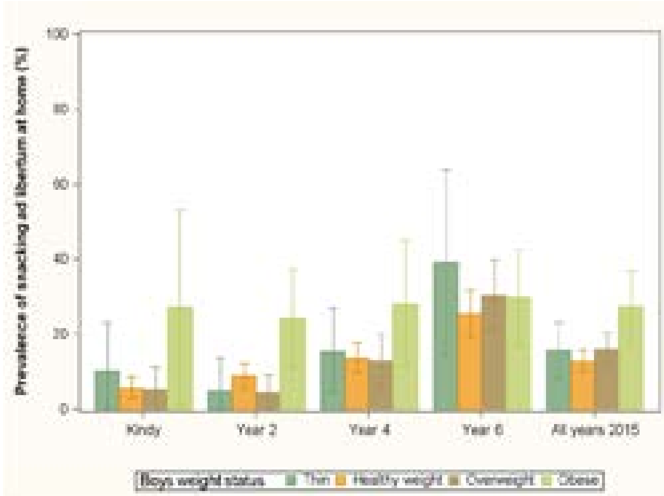
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 6.11 Prevalence of unrestricted snacking among children in primary school by sex, year group, socio-demographic characteristics, and BMI category in 2015 (%, 95%CI)







FAST FOOD CONSUMPTION

'Fast food' is a general term used for a limited menu of foods that lend themselves to production-line techniques where suppliers tend to specialise in products such as hamburgers, pizzas, chicken or sandwiches.[39] In the last 20 years, the fast food industry has grown exponentially providing a diverse range of processed food products that have had considerable influence on the eating habits of large segments of the population.[40]

Fast foods are typically high in kilojoules, fat, saturated fat, sugar and salt and regular consumption is associated with higher caloric intake and poorer diet quality, characterised by a diet higher in fat, carbohydrate and sugar.[41] Further, fast food is cheap and readily and widely available with an estimated one in five children worldwide consuming fast food frequently.[42] Indeed, in terms of foods eaten away from home, fast food represents the largest contributor to energy intake among children age 2 to 18 years.[43]

The Australian Dietary Guideline 3 recommends limiting intake of foods high in saturated fat such as many biscuits and cakes, pastries, pies, processed meats, commercial hamburgers, pizza, fried foods, potato chips, crisps and other savoury snacks. Further, 'discretionary'[1] foods should only be consumed sometimes, and in small amounts.[12] SPANS asked about how frequently children usually ate takeaway meals or snacks from places like McDonald's, Hungry Jack's, Pizza Hut, KFC, Red Rooster or local takeaway food places. Information on the type or quantity of fast food purchased was not collected.

Table 6.12 and Figure 6.12 show the prevalence of eating takeaway meals (or snacks) from major corporate fast food outlets and local takeaway food venues among children in 2015, and in 2010 for comparison by sex and year group. Overall, one in five (20%) children ate takeaway meals one or more times a week and this prevalence was broadly consistent across year groups. This prevalence was lower than in 2010, when approximately one on four (24%) children ate takeaway meals or snacks from fast food outlets one or more times a week (note, no significance testing was conducted).

[1] *Discretionary choices are not an essential or necessary part of healthy dietary patterns. Discretionary foods are high in kilojoules, saturated fat, added sugars, added salt, or alcohol. If chosen, they should be eaten only sometimes and in small amounts.*

For younger children (up to about 8 years of age), discretionary choices are best avoided or limited to no more than ½ serve a day unless the child is taller or more active, in which case they could have 0-2 serves a day. Older children and adolescents who are more active and not above their healthy weight range could have up to 2 ½ serves a day, and older adolescents up to 3 serves a day.

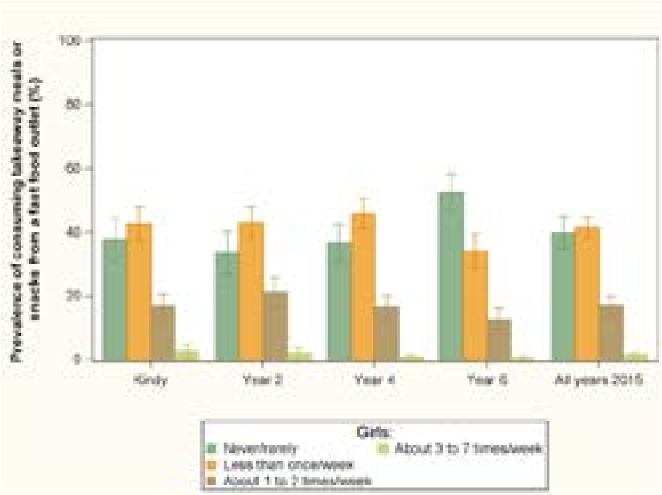
A sample Discretionary serve could be: 2 scoops (75g) ice-cream, 1 (40g) doughnut, 1 can soft drink, ½ small bar (25g) chocolate, 12 (60g) fried hot chips, ¼ meat pie or pastie (full pie = 4 serves).

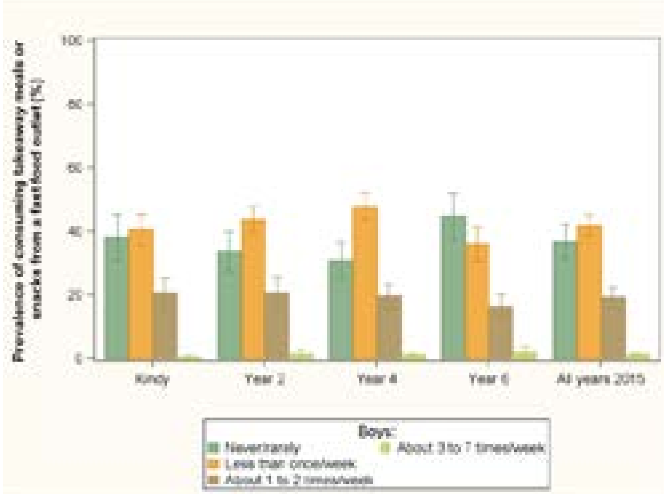
Table 6.12 Prevalence of eating takeaway meals or snacks from a fast food outlet among children in primary school by sex and year group in 2015 and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Never/rarely	38.0 (3.1)	33.7 (3.0)	33.8 (2.7)	48.8 (2.8)	38.5 (2.6)	28.6 (2.2)
Less than once/week	41.6 (2.1)	43.4 (1.9)	46.9 (1.8)	35.1 (2.0)	41.8 (1.4)	47.5 (1.4)
About 1 to 2 times/week	18.8 (1.9)	21.0 (2.1)	18.1 (1.7)	14.7 (1.4)	18.2 (1.4)	22.5 (1.5)
About 3 to 7 times/week	1.7 (0.6)	2.0 (0.5)	1.1 (0.3)	1.4 (0.5)	1.6 (0.3)	1.4 (0.3)
GIRLS						
Never/rarely	37.7 (3.3)	33.7 (3.3)	36.5 (2.9)	52.6 (2.9)	39.9 (2.6)	29.9 (2.3)
Less than once/week	42.6 (2.7)	42.9 (2.5)	45.9 (2.3)	34.0 (2.7)	41.4 (1.7)	47.2 (1.6)
About 1 to 2 times/week	16.9 (2.0)	21.3 (2.4)	16.6 (1.8)	12.8 (1.7)	17.0 (1.5)	21.6 (1.6)
About 3 to 7 times/week	2.8 (1.0)	2.1 (0.8)	1.0 (0.4)	0.5 (0.3)	1.7 (0.4)	1.3 (0.3)
BOYS						
Never/rarely	38.3 (3.6)	33.6 (3.1)	31.0 (2.9)	44.9 (3.5)	37.0 (2.7)	27.4 (2.3)
Less than once/week	40.6 (2.4)	43.9 (2.0)	48.0 (2.1)	36.2 (2.8)	42.1 (1.5)	47.8 (1.6)
About 1 to 2 times/week	20.6 (2.4)	20.7 (2.5)	19.7 (1.9)	16.6 (1.8)	19.4 (1.6)	23.4 (1.6)
About 3 to 7 times/week	0.5 (0.3)	1.8 (0.6)	1.3 (0.4)	2.3 (0.8)	1.4 (0.3)	1.5 (0.3)

Note: No significance testing was conducted.

Figure 6.12 Prevalence of eating takeaway meals or snacks from a fast food outlet among children in primary school by sex and year group in 2015 (%, 95%CI)





SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately one in five children (20%) in primary school ate takeaway meals or snacks from a fast food outlet one or more times a week in 2015. Table 6.13 and Figure 6.13 show the prevalence of usually eating takeaway meals or snacks from a fast food outlet at least once a week among children stratified by sex, year group, socio-demographic characteristics and BMI category in 2015 and in 2010 for comparison.

Locality

2015: Overall, the prevalence of eating takeaway meals or snacks from a fast food outlet at least once a week was significantly lower among girls from rural areas (14%), compared with girls from urban areas (20%).

Change between 2010-2015: Overall, the prevalence of eating meals or snacks from fast food outlets one or more times a week significantly decreased among girls from rural areas from 25% in 2010 to 14% in 2015.

Socio-economic status

2015: Overall, the prevalence of eating meals or snacks from fast food outlets one or more times a week was significantly higher among children from low SES (28%) and from middle SES (21%), compared with children from high SES backgrounds (15%). The prevalence was significantly higher among girls from low SES (25%) and from middle SES (21%), compared with girls from high SES backgrounds (14%); and among boys from low SES backgrounds (32%), compared with boys from high SES backgrounds (16%).

Change between 2010-2015: Overall, the prevalence of eating meals or snacks from fast food outlets one or more times a week significantly decreased among children from high SES backgrounds, from 23% in 2010 to 15% in 2015; and among girls from high SES backgrounds, from 22% in 2010 to 14% in 2015; and among boys from high SES backgrounds, from 23% in 2010 to 16% in 2015.

Cultural background

2015: Overall, the prevalence of eating meals or snacks from fast food outlets one or more times a week was significantly higher among children from Middle Eastern (30%) and Asian (29%) cultural backgrounds, compared with children from English-speaking backgrounds (19%). The prevalence was significantly higher among girls from Middle Eastern (26%) and from Asian (29%) cultural backgrounds, compared with girls from English-speaking backgrounds (17%). The prevalence was significantly higher among boys from Middle Eastern (34%) and from Asian (30%) cultural backgrounds and significantly lower among boys from European (8%), compared with boys from English-speaking (20%) cultural backgrounds.

Change between 2010-2015: There were no significant changes in the prevalence of eating meals or snacks from fast food outlets more than once a week among children from different cultural backgrounds between 2010 and 2015.

Weight status

2015: Overall, the prevalence of eating meals or snacks from fast food outlets one or more times a week was significantly higher among children in the obese BMI category (28%), compared with children in the healthy weight BMI category (19%); and among boys in the overweight (24%) and obese (33%) BMI categories, compared with boys in the healthy weight BMI category (19%).

Change between 2010-2015: Overall, the prevalence of eating meals or snacks from fast food outlets one or more times a week significantly decreased among children in the healthy weight BMI category from 24% in 2010 to 19% in 2015; and among boys in the healthy weight BMI category from 24% in 2010 to 19% in 2015.

Table 6.13 Prevalence of eating takeaway meals or snacks from a fast food outlet at least once a week among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Locality						
Urban (ref)	20.8 (2.5)	24.4 (2.7)	20.7 (1.9)	16.9 (2.0)	20.8 (1.9)	24.2 (1.7)
Rural	19.0 (3.6)	17.4 (3.6)	14.6 (3.7)	13.6 (2.4)	16.1 (2.7)	21.9 (3.3)
SES						
Low	**34.5 (4.4) a**	**29.7 (4.8) a**	**24.2 (3.9) a**	**24.1 (4.0) a**	**28.3 (2.9) a**	28.2 (2.6)
Middle	18.0 (3.5)	**26.2 (3.8) a**	**21.9 (3.2) a**	17.0 (2.5)	**20.7 (2.6) a**	21.7 (2.0)
High (ref)	15.8 (2.2)	17.4 (2.5)	14.7 (2.0)	11.0 (1.9)	14.9 (1.8)	**22.7 (2.5) b**
Cultural background						
English-speaking (ref)	18.6 (2.0)	22.5 (2.5)	18.3 (1.9)	14.5 (1.5)	18.5 (1.6)	22.5 (1.6)
European	19.1 (10.5)	11.5 (5.7)	3.6 (3.8)	28.6 (13.1)	16.2 (4.8)	22.1 (6.3)
Middle Eastern	**34.2 (4.7) a**	21.2 (3.6)	**35.5 (5.9) a**	**29.7 (5.7) a**	**30.3 (2.7) a**	28.4 (3.2)
Asian	**30.7 (5.5) a**	**34.9 (6.8) a**	22.7 (5.5)	**26.0 (4.5) a**	**29.0 (4.1) a**	33.8 (3.5)
BMI category						
Thin	25.0 (3.9)	22.2 (6.8)	18.1 (3.8)	13.8 (3.9)	19.7 (2.9)	25.4 (2.8)
Healthy weight (ref)	19.4 (2.0)	21.3 (2.2)	18.1 (1.8)	15.5 (1.6)	18.6 (1.5)	**23.5 (1.8) b**
Overweight	21.6 (4.5)	26.4 (3.8)	20.2 (3.1)	17.6 (3.0)	21.1 (2.3)	23.1 (2.0)
Obese	27.1 (5.6)	**34.5 (7.8) a**	**29.3 (5.4) a**	21.2 (5.7)	**28.3 (2.9) a**	27.3 (3.2)

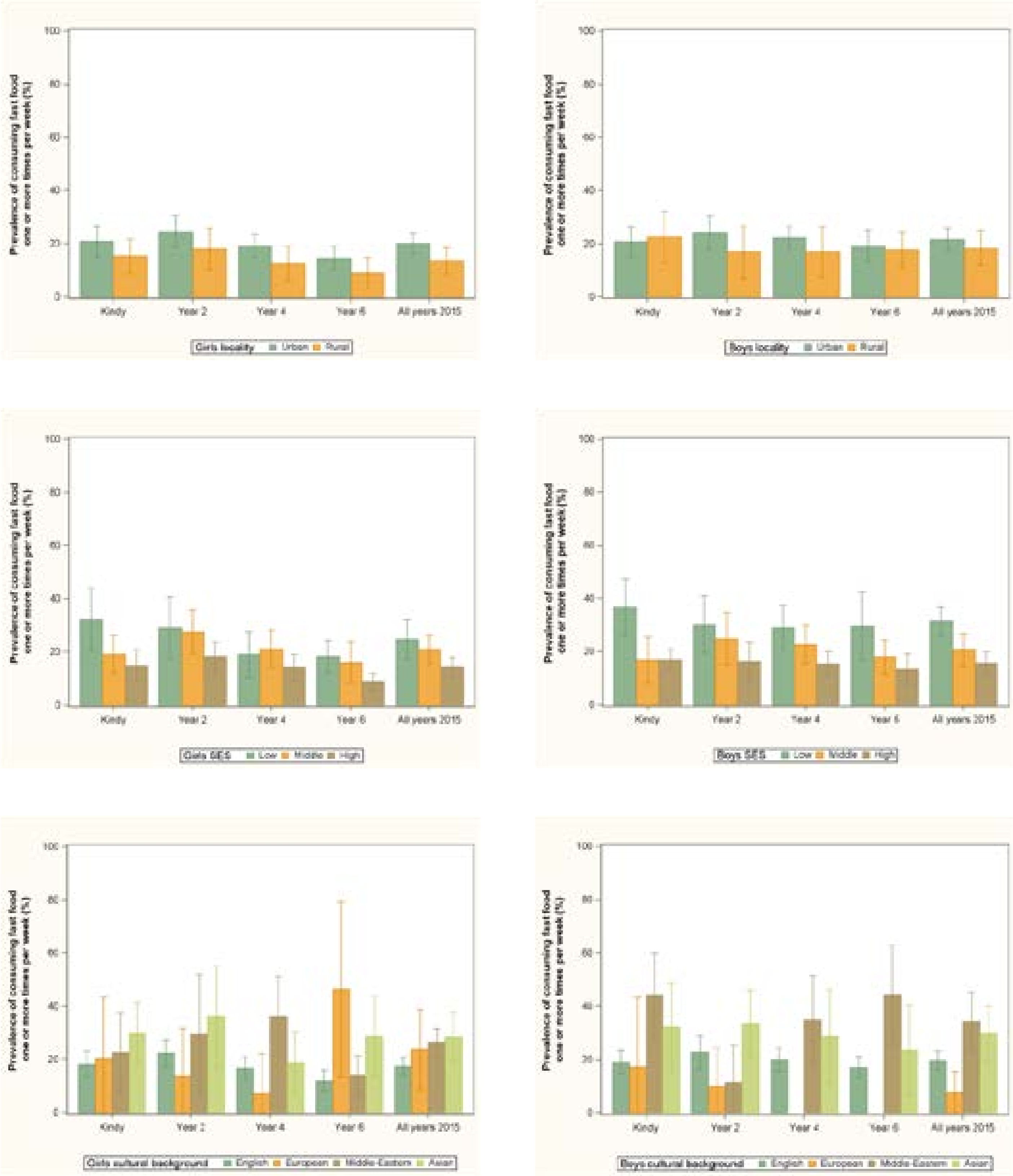
	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
GIRLS						
Locality						
Urban (ref)	20.8 (2.9)	24.6 (3.0)	19.2 (2.1)	14.6 (2.1)	20.0 (1.9)	22.6 (1.8)
Rural	15.3 (3.2)	18.0 (3.9)	12.5 (3.3)	9.0 (2.9)	**13.6 (2.4) a**	**24.8 (4.8) b**
SES						
Low	**32.1 (5.9) a**	**29.1 (5.7) a**	19.0 (4.3)	**18.2 (3.0) a**	**24.7 (3.6) a**	27.4 (3.5)
Middle	19.1 (3.5)	**27.5 (4.1) a**	21.1 (3.5)	**16.0 (3.8) a**	**21.0 (2.6) a**	20.1 (2.0)
High (ref)	14.7 (3.0)	18.3 (2.7)	14.1 (2.5)	8.7 (1.6)	14.2 (1.9)	**22.1 (3.1) b**
Cultural background						
English-speaking (ref)	18.1 (2.5)	22.3 (2.6)	16.7 (2.0)	12.0 (2.0)	17.4 (1.7)	21.5 (1.8)
European	20.1 (11.4)	13.6 (8.8)	7.2 (7.4)	**46.4 (16.4) a**	23.8 (7.5)	24.1 (9.3)
Middle Eastern	22.6 (7.3)	29.4 (11.1)	**36.0 (7.5) a**	13.9 (3.8)	**26.4 (2.5) a**	24.7 (3.1)
Asian	**29.8 (5.8) a**	36.1 (9.5)	18.7 (5.7)	**28.8 (7.6) a**	**28.5 (4.5) a**	33.5 (4.1)
BMI category						
Thin	19.5 (5.7)	22.1 (9.6)	21.2 (5.7)	13.5 (5.5)	18.7 (3.3)	22.3 (3.6)
Healthy weight (ref)	20.2 (2.7)	21.6 (2.4)	17.5 (2.1)	13.4 (1.9)	18.3 (1.7)	22.8 (2.0)
Overweight	18.0 (4.6)	28.8 (5.6)	14.5 (3.3)	12.8 (3.6)	18.5 (2.5)	23.6 (2.3)
Obese	20.1 (8.6)	32.5 (7.6)	27.0 (5.7)	14.2 (5.7)	24.0 (3.7)	25.1 (4.7)
BOYS						
Locality						
Urban (ref)	20.8 (2.7)	24.1 (3.2)	22.3 (2.1)	19.2 (2.9)	21.6 (2.0)	25.6 (1.9)
Rural	22.6 (4.7)	16.8 (5.0)	16.8 (4.7)	17.8 (3.3)	18.5 (3.2)	19.7 (2.3)
SES						
Low	**36.8 (5.3) a**	**30.2 (5.3) a**	**29.2 (4.1) a**	**29.7 (6.3) a**	**31.6 (2.7) a**	28.9 (2.8)
Middle	16.9 (4.3)	24.8 (4.8)	22.8 (3.6)	17.9 (3.2)	20.5 (3.0)	23.2 (2.3)
High (ref)	16.9 (1.9)	16.3 (3.6)	15.3 (2.3)	13.5 (2.8)	15.7 (2.1)	**23.2 (2.3) b**
Cultural background						
English-speaking (ref)	19.1 (2.1)	22.7 (3.1)	20.0 (2.2)	17.0 (2.0)	19.7 (1.7)	23.4 (1.8)
European	17.3 (12.9)	10.0 (7.3)	na	na	**7.5 (3.9) a**	19.9 (8.9)
Middle Eastern	**44.1 (7.8) a**	11.4 (7.0)	**34.8 (8.2) a**	**44.2 (9.2) a**	**34.3 (5.4) a**	31.8 (3.8)
Asian	**32.3 (8.2) a**	33.4 (6.2)	28.6 (8.6)	23.4 (8.4)	**29.8 (5.0) a**	34.0 (5.0)
BMI category						
Thin	**30.8 (6.9) a**	22.3 (7.8)	14.8 (4.5)	14.3 (6.5)	21.1 (3.8)	28.7 (3.5)
Healthy weight (ref)	18.6 (1.9)	21.1 (2.8)	18.7 (2.2)	17.5 (2.3)	19.0 (1.7)	**24.2 (2.0) b**
Overweight	26.2 (7.2)	23.3 (5.4)	26.6 (4.4)	21.3 (3.5)	**23.9 (2.8) a**	22.5 (2.8)
Obese	**34.9 (8.3) a**	36.6 (10.9)	31.8 (8.7)	28.3 (8.0)	**33.0 (4.1) a**	29.6 (4.2)

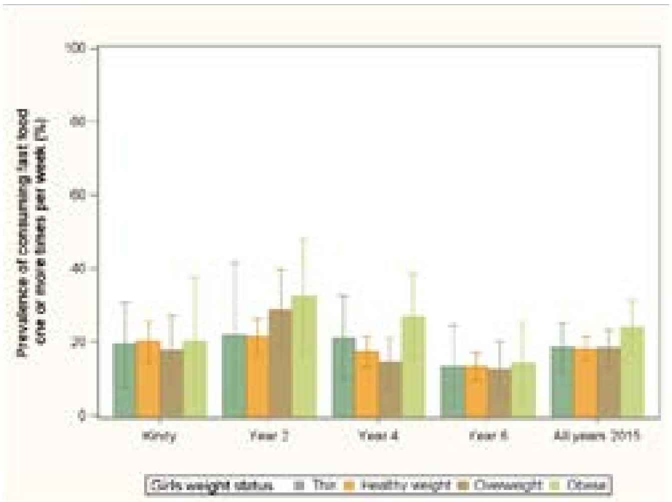
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

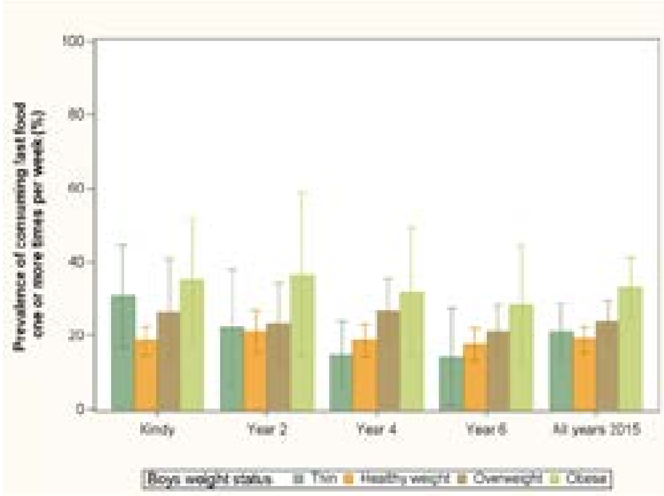
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 6.13 Prevalence of eating takeaway meals or snacks from a fast food outlet at least once a week among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)







SCHOOL FOOD ENVIRONMENT

School canteens are a major source of takeaway foods in NSW, with about 2,700 schools providing a canteen service. For children who regularly purchase lunch and snacks from the school canteen, this contributes to a substantial portion of their daily food intake.[44] Healthy school canteens provide an opportunity to encourage healthy eating, although energy-dense, nutrient-poor food choices are still available in many NSW canteens.[45, 46]

Concern about the increase in child obesity rates has driven efforts to assist schools to improve the school food environment. The school canteen can potentially undermine curriculum and parental efforts to improve children's nutrition habits and create the impression that processed foods are everyday rather than occasional foods.[47] In NSW, the *Fresh Tastes @ School* NSW Healthy School Canteen Strategy supports all government schools to provide a healthy, nutritious canteen menu. Implementation of the strategy is mandatory for government school canteens through the Nutrition in Schools Policy.[48]

The following section reports on the school food environment, specifically on how frequently children in primary school purchase lunch from the school canteen and what types of drinks were purchased at the school canteen and from school vending machines. Children who reported that their school did not have a canteen (5%) or vending machine (75%) were excluded from the analyses of those items.

BUYING LUNCH FROM THE SCHOOL CANTEEN

While there have been substantial efforts to support improvements in school canteens and school food environments, there is also evidence that schools have difficulty implementing healthy school canteen policies.[49] Logistically it is not possible to monitor individual lunch items that children purchase from the school canteen; rather SPANS assessed the frequency with which lunch was 'usually' purchased at the school canteen. The question did not ask about the quality or quantity of food purchased for lunch from school canteens.

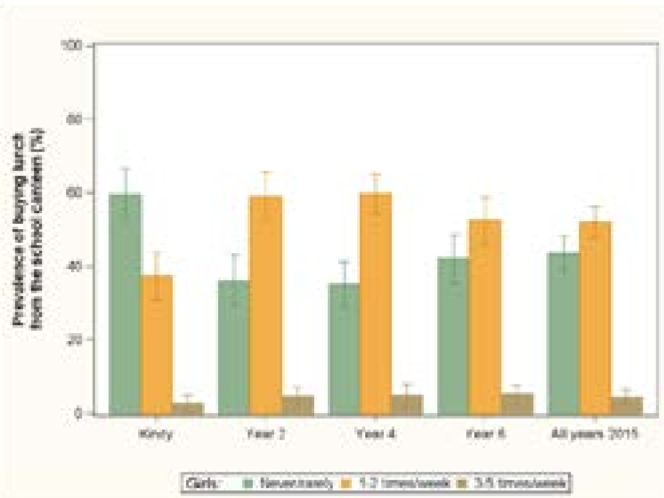
Table 6.14 and Figure 6.14 show the frequency of purchasing lunch from the school canteen among children in 2015 and in 2010 for comparison by sex and year group. Overall, in 2015 55% of children purchased lunch from the school canteen one or more times a week, with 4% purchasing lunch from the school canteen 3-5 days a week. The frequency of purchasing lunch from the school canteen appeared to be lower among kindergarten children. There were no substantial differences in the proportions of children who usually purchased their lunch from the school canteen between 2010 and 2015.

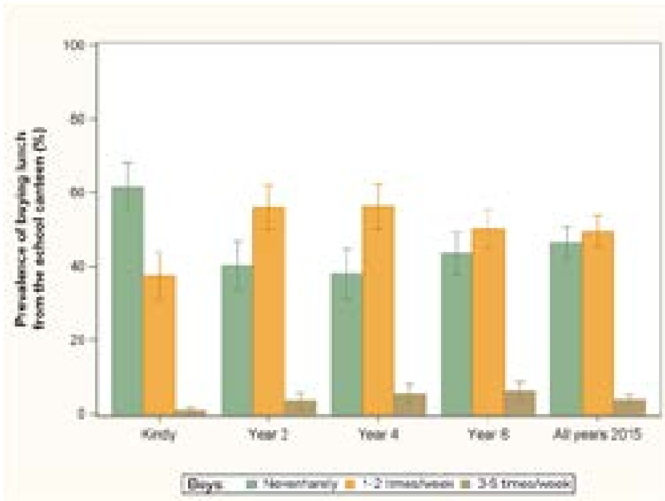
Table 6.14 Prevalence of buying lunch from the school canteen among children in primary school by sex and year group in 2015 and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Never/rarely	60.7 (3.0)	38.2 (2.8)	36.7 (2.6)	42.8 (2.7)	45.0 (2.0)	40.3 (1.7)
About 1 to 2 times/week	37.4 (2.9)	57.7 (2.6)	58.1 (2.3)	51.4 (2.5)	50.8 (1.9)	54.1 (1.5)
About 3 to 5 times/week	1.9 (0.6)	4.1 (1.0)	5.2 (1.1)	5.7 (1.0)	4.2 (0.7)	5.6 (0.8)
GIRLS						
Never/rarely	59.6 (3.4)	36.2 (3.4)	35.3 (3.0)	42.2 (3.3)	43.6 (2.4)	38.9 (1.9)
About 1 to 2 times/week	37.4 (3.1)	59.1 (3.2)	59.7 (2.6)	52.5 (3.2)	51.9 (2.1)	54.9 (1.7)
About 3 to 5 times/week	2.9 (1.1)	4.7 (1.2)	5.0 (1.6)	5.3 (1.3)	4.4 (1.0)	6.2 (1.0)
BOYS						
Never/rarely	61.7 (3.3)	40.3 (3.2)	38.1 (3.4)	43.5 (2.9)	46.4 (2.2)	41.5 (1.9)
About 1 to 2 times/week	37.4 (3.3)	56.2 (2.9)	56.4 (3.0)	50.3 (2.6)	49.6 (2.1)	53.3 (1.9)
About 3 to 5 times/week	1.0 (0.4)	3.4 (1.1)	5.5 (1.3)	6.2 (1.2)	3.9 (0.7)	5.1 (0.8)

Note: No significance testing was conducted.

Figure 6.14 Prevalence of buying lunch from the school canteen among children in primary school by sex and year group in 2015 (%, 95%CI)





DRINKS PURCHASED AT SCHOOL

Almost all (95%) children in primary schools participating in SPANS reported their school had a canteen (which potentially sells drinks). Objective 1.3 of the NSW Nutrition in Schools Policy states *All sugar-sweetened drinks that exceed the nutritional criteria for 'occasional' foods outlined in the Fresh Tastes @ School Canteen Menu Planning Guide, are not permitted for sale in school canteens and school vending machines at all times.*[48] SPANS asked if children purchased drinks at school, and if they did, the type of drink they usually purchased. Children were asked to choose the drink they purchased most often from the school canteen or from the vending machine. The question did not ask about quantity of drink purchased.

Table 6.15 and Figure 6.15 show the frequency of different types of drinks purchased from the school canteen among children in 2015, and in 2010 for comparison by sex and year group. Children who reported their school did not have a canteen (5%) were excluded from the analyses.

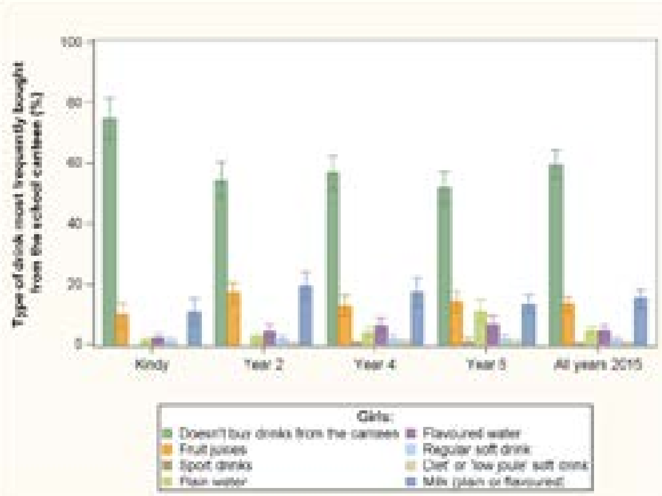
Overall, in 2015, 41% of children purchased drinks from the school canteen. The most prevalent drinks purchased were plain or flavoured milk (18%) and fruit juice (12%). The type of drinks purchased at the school canteen appeared to be broadly consistent across all year groups. The proportion of children who purchased drinks from the school canteen appeared to have decreased between 2010 (54%) and 2015 (41%).

Table 6.15 Type of drink usually purchased from the school canteen among children in primary school by sex and year group in 2015 and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Doesn't buy drinks from the canteen	74.2 (2.7)	53.2 (2.5)	54.5 (2.5)	51.0 (2.7)	58.6 (2.0)	48.1 (2.2)
Fruit juices	7.6 (1.2)	15.7 (1.4)	11.5 (1.5)	12.4 (1.4)	11.7 (1.0)	14.1 (0.9)
Sport drinks	0.1 (0.1)	0.1 (0.1)	0.2 (0.1)	2.3 (0.6)	0.6 (0.2)	3.9 (0.6)
Plain water	1.7 (0.4)	2.7 (0.5)	3.9 (0.8)	8.7 (1.3)	4.2 (0.5)	5.9 (0.6)
Flavoured water	2.4 (0.7)	4.0 (0.8)	6.2 (1.2)	5.9 (1.2)	4.6 (0.7)	na
Regular soft drink	0.6 (0.2)	1.6 (0.6)	1.6 (0.4)	2.6 (0.6)	1.6 (0.3)	2.9 (0.6)
'Diet' or 'low joule' soft drink	0.1 (0.1)	0.6 (0.2)	0.5 (0.2)	1.1 (0.3)	0.6 (0.2)	1.5 (0.4)
Milk (plain or flavoured)	13.2 (1.7)	22.2 (2.1)	21.6 (2.0)	15.9 (1.4)	18.1 (1.5)	23.6 (1.9)
GIRLS						
Doesn't buy drinks from the canteen	75.0 (3.4)	54.4 (3.0)	56.8 (2.7)	51.7 (2.6)	59.6 (2.3)	47.5 (2.5)
Fruit juices	9.7 (1.9)	17.1 (1.7)	12.8 (1.7)	14.1 (1.8)	13.4 (1.2)	16.7 (1.2)
Sport drinks	na	na	0.4 (0.2)	0.8 (0.6)	0.3 (0.2)	3.3 (0.6)
Plain water	1.1 (0.4)	2.5 (0.7)	4.0 (0.9)	11.0 (1.9)	4.6 (0.6)	7.2 (0.7)
Flavoured water	2.1 (0.7)	4.5 (1.0)	6.2 (1.2)	6.5 (1.5)	4.8 (0.8)	na
Regular soft drink	1.2 (0.5)	1.7 (0.6)	1.7 (0.7)	1.8 (0.6)	1.6 (0.4)	2.4 (0.5)
'Diet' or 'low joule' soft drink	na	0.3 (0.2)	0.8 (0.4)	0.8 (0.5)	0.4 (0.2)	1.3 (0.4)
Milk (plain or flavoured)	10.9 (2.1)	19.5 (2.2)	17.4 (2.3)	13.2 (1.5)	15.2 (1.5)	21.6 (2.1)
BOYS						
Doesn't buy drinks from the canteen	73.4 (2.9)	51.9 (2.9)	52.1 (3.2)	50.3 (3.4)	57.4 (2.1)	48.6 (2.3)
Fruit juices	5.7 (1.1)	14.3 (1.6)	10.1 (2.1)	10.7 (1.7)	10.0 (1.1)	11.6 (0.9)
Sport drinks	0.1 (0.1)	0.1 (0.1)	na	3.8 (1.1)	1.0 (0.3)	4.5 (0.8)
Plain water	2.4 (0.7)	2.9 (0.7)	3.8 (0.9)	6.5 (1.1)	3.9 (0.5)	4.7 (0.7)
Flavoured water	2.7 (0.8)	3.4 (0.8)	6.2 (1.6)	5.3 (1.5)	4.4 (0.8)	na
Regular soft drink	na	1.4 (0.8)	1.5 (0.4)	3.3 (0.9)	1.5 (0.3)	3.5 (0.7)
'Diet' or 'low joule' soft drink	0.3 (0.3)	0.9 (0.4)	0.2 (0.2)	1.5 (0.6)	0.7 (0.2)	1.8 (0.4)
Milk (plain or flavoured)	15.5 (2.2)	25.2 (2.6)	26.0 (2.6)	18.6 (1.9)	21.1 (1.7)	25.4 (2.2)

Note: No significance testing was conducted.
na *flavoured water consumption was not asked in SPANS 2010.*

Figure 6.15 Type of drink most frequently bought from the school canteen among children in primary school by sex and year group in 2015 (%, 95%CI)



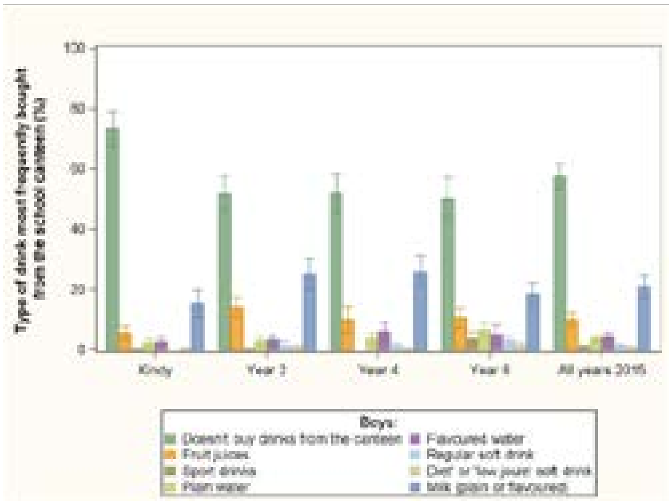


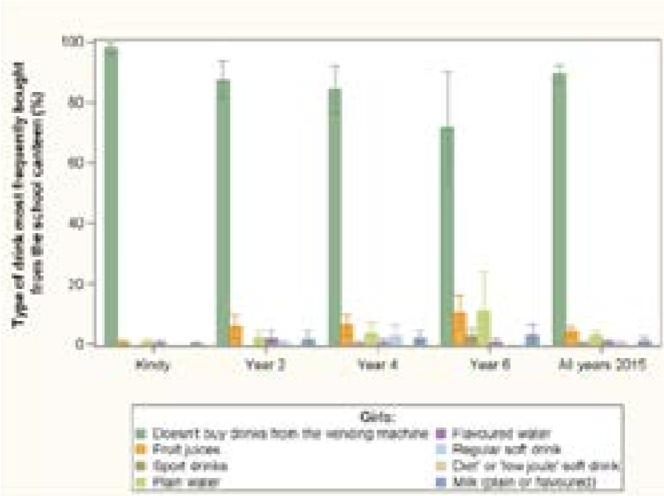
Table 6.16 and Figure 6.16 show the frequency of different types of drinks purchased from school vending machines among children in 2015, and in 2010 for comparison by sex and year group. Children who reported their school did not have a vending machine (75%) were excluded from the analyses. Overall, in 2015 11% of children purchased drinks from a school vending machine. The most prevalent drinks purchased were fruit juice (4%) and plain water (3%). The type of drinks purchased at the school canteen appeared to be broadly consistent across year groups. The proportion of children who did not purchase drinks from the school canteen appeared to have decreased between 2010 (17%) and 2015 (11%).

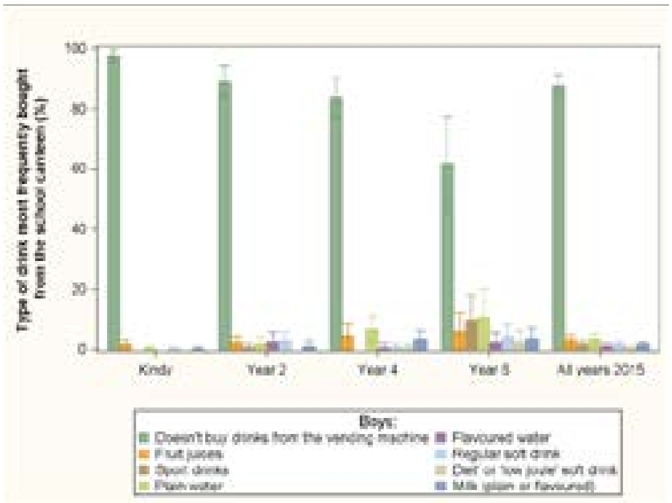
Table 6.16 Type of drink usually purchased from the school vending machine among children in primary school by sex and year group in 2015 and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Doesn't buy drinks from the vending machine	97.8 (0.8)	88.1 (2.1)	83.9 (3.1)	66.8 (7.5)	88.5 (1.3)	82.9 (2.0)
Fruit juices	1.0 (0.5)	4.3 (1.2)	5.6 (1.5)	8.3 (2.1)	3.7 (0.7)	4.1 (0.7)
Sport drinks	na	0.3 (0.3)	0.2 (0.2)	6.1 (2.3)	1.0 (0.3)	3.1 (0.7)
Plain water	0.5 (0.3)	2.0 (0.8)	5.0 (1.5)	10.9 (4.0)	3.2 (0.6)	4.9 (0.9)
Flavoured water	0.2 (0.2)	2.2 (1.1)	0.6 (0.5)	1.5 (0.9)	1.0 (0.3)	na
Regular soft drink	0.1 (0.1)	1.6 (0.8)	1.8 (1.1)	2.0 (1.1)	1.1 (0.3)	2.9 (0.7)
'Diet' or 'low joule' soft drink	na	na	0.3 (0.3)	1.1 (1.1)	0.2 (0.2)	0.2 (0.1)
Milk (plain or flavoured)	0.3 (0.2)	1.5 (0.8)	2.6 (1.0)	3.3 (1.4)	1.4 (0.4)	2.0 (0.8)
GIRLS						
Doesn't buy drinks from the vending machine	98.0 (0.9)	87.4 (3.1)	84.2 (3.9)	71.8 (9.1)	89.3 (1.5)	83.2 (2.7)
Fruit juices	0.6 (0.5)	6.0 (2.0)	6.5 (1.8)	10.6 (2.9)	4.4 (0.8)	4.9 (1.0)
Sport drinks	na	na	0.4 (0.4)	2.9 (1.2)	0.5 (0.2)	1.5 (0.6)
Plain water	0.7 (0.5)	2.3 (1.2)	3.5 (1.9)	11.1 (6.3)	3.0 (0.8)	5.1 (1.3)
Flavoured water	0.4 (0.4)	2.0 (1.4)	0.6 (0.7)	0.7 (0.7)	0.9 (0.4)	na
Regular soft drink	na	0.4 (0.4)	2.7 (1.9)	na	0.6 (0.4)	2.8 (1.0)
'Diet' or 'low joule' soft drink	na	na	na	na	na	na
Milk (plain or flavoured)	0.2 (0.2)	1.8 (1.3)	2.1 (1.2)	3.0 (1.9)	1.3 (0.6)	2.6 (1.6)
BOYS						
Doesn't buy drinks from the vending machine	97.6 (1.0)	88.9 (2.6)	83.6 (3.3)	61.7 (7.7)	87.7 (1.9)	82.6 (2.3)
Fruit juices	1.5 (0.8)	2.3 (1.1)	4.5 (2.0)	6.0 (3.1)	2.9 (1.0)	3.4 (0.9)
Sport drinks	na	0.7 (0.6)	na	9.4 (4.3)	1.5 (0.6)	4.4 (1.0)
Plain water	0.4 (0.4)	1.7 (1.2)	6.8 (2.1)	10.7 (4.7)	3.4 (1.0)	4.8 (1.1)
Flavoured water	na	2.4 (1.7)	0.6 (0.7)	2.3 (1.7)	1.0 (0.5)	na
Regular soft drink	0.3 (0.3)	2.8 (1.6)	0.7 (0.6)	4.2 (2.0)	1.5 (0.5)	3.0 (1.0)
'Diet' or 'low joule' soft drink	na	na	0.6 (0.6)	2.2 (2.1)	0.4 (0.3)	0.3 (0.2)
Milk (plain or flavoured)	0.3 (0.3)	1.1 (0.8)	3.2 (1.5)	3.6 (1.8)	1.5 (0.5)	1.6 (0.6)

Note: No significance testing was conducted.
na *Indicates very low numbers.*

Figure 6.16 Type of drink most frequently bought from the school vending machine among children in primary school by sex and year group in 2015 (%, 95%CI)





SUMMARY OF THE DIETARY HABITS OF CHILDREN IN PRIMARY SCHOOL

The table below summarises the prevalence of indicators of dietary habits in children in primary school.

Dietary indicator	Government policies and programs	SPANS cut point	Prevalence (%)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
HOME-BASED DIETARY HABITS					
Breakfast	Skipping breakfast is associated with reduced intake of calcium and dietary fibre; and children who do not eat breakfast are at increased risk of overweight and obesity, with the evidence being stronger for adolescents[12]	Daily	84.9%	84.0%	**2015:** Overall, the proportion of children eating daily breakfast was significantly lower in children from low SES backgrounds and from Middle Eastern and Asian cultural backgrounds; and significantly higher among children from rural areas and in the overweight and obese BMI categories **Change between 2010-15:** Overall, there were no significant changes in the proportion of children eating breakfast daily between 2010 and 2015. Within subgroups, eating breakfast daily significantly decreased only among children from Middle Eastern cultural backgrounds
Regularly eating dinner in front of the TV	No specific recommendations	≥5 times/day	19.5%	15.7% sig	**2015:** Overall, the proportion of children eating dinner in front of the TV ≥5/week was significantly higher among children from low SES backgrounds, European, Middle Eastern and Asian cultural backgrounds, and children in the obese BMI category; and was significantly lower among children from rural areas **Change between 2010-15:** Overall, the proportion of children eating dinner in front of the TV ≥5/week significantly decreased between 2010 and 2015. Within subgroups, eating dinner in front of the TV ≥5/week significantly decreased among children from urban areas, from English-speaking and Middle Eastern cultural backgrounds, and in the overweight BMI category

Dietary indicator	Government policies and programs	SPANS cut point	Prevalence (%)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
Soft drink availability in the home	Limit intake of foods high in saturated fat such as many biscuits and cakes, pastries, pies, processed meats, commercial hamburgers, pizza, fried foods, potato chips, crisps and other savoury snacks. Discretionary foods should only be consumed sometimes and in small amounts[12]	'Usually'	na	7.4%	**2015:** Overall, the proportion of children usually having soft drinks available in the home was significantly higher among children from low SES backgrounds, from Middle Eastern cultural backgrounds, and in the overweight and obese BMI categories
Family offering sweets as a reward for good behaviour		'Usually'	9.6%	6.4%	**2015:** Subgroup differences were not assessed **Change between 2010-15:** Overall, and within subgroups, there were no significant changes in the proportion of children usually being offered sweets for good behaviour
Unrestricted snacking at home		Child can help themself to snack food whenever they like	na	14.2%	**2015:** Overall, the proportion of children with unrestricted snacking at home was significantly higher among children from low SES backgrounds, from Middle Eastern and Asian cultural backgrounds, and in the obese BMI category
Takeaway and fast food intake		One or more times/week	23.9%	19.8%	**2015:** Overall, the proportion of children eating takeaway or fast food ≥1/week was significantly higher among children from low and middle SES backgrounds, from Middle Eastern and Asian cultural backgrounds, and in the obese BMI category **Change between 2010-15:** Overall, there were no significant changes in the proportion of children eating takeaway or fast food between 2010 and 2015. Within subgroups, eating takeaway and fast food ≥1/week significantly decreased among children from high SES backgrounds and children in the healthy weight BMI categories
FOOD AND DRINK PURCHASES AT SCHOOL					
Purchasing lunch from school canteen	Fresh Tastes @ School NSW Healthy School Canteen Strategy supports all NSW government schools to provide a healthy, nutritious canteen menu. Implementation of the strategy is mandatory for government school canteens through the Nutrition in Schools Policy	3-5 times/week	5.6%	4.2%	**2015:** Subgroup differences were not assessed
Type of drinks purchased from school canteen	In 2007, the sale of sugar-sweetened drinks was banned in NSW government schools[50]	Sugar-sweetened beverage purchases (i.e., fruit juice, sport drinks, flavoured water, regular & diet soft drinks)	22%	15%	
Type of drinks purchased from school vending machine			9%	6%	

sig *Indicates statistically significant difference at P < 0.05. *Comparisons are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category; n/a = not available.*

SECONDARY SCHOOL

The following section describes the usual food behaviours of adolescents in Years 8 and 10 in secondary schools participating in SPANS. The findings are based on the self-reported responses of the adolescents. The prevalence estimates (%) need to be interpreted in conjunction with their standard errors (SE); a proportionally large standard error means a less precise estimate.

EATING BREAKFAST

Daily breakfast consumption is associated with a healthier diet pattern, while persistent skipping of breakfast may have detrimental effects on cardio-metabolic health,[5] and irregular breakfast eating is associated with a higher body mass index and an increased probability of being overweight or obese.[6, 7] More recently, evidence suggests that eating a healthy daily breakfast is associated with better academic outcomes in primary school age children.[11]

It is estimated that between 10-30% of young people globally skip breakfast[8] with girls being more likely to skip breakfast, especially during their teenage years as they incorrectly perceive this practice to be a weight loss strategy.[9] Youth from disadvantaged backgrounds are more likely to skip breakfast.[51]

The Australian Dietary Guidelines encourage adolescents to eat breakfast daily.[12] The SPANS question indicates frequency, not quality or quantity of breakfast.

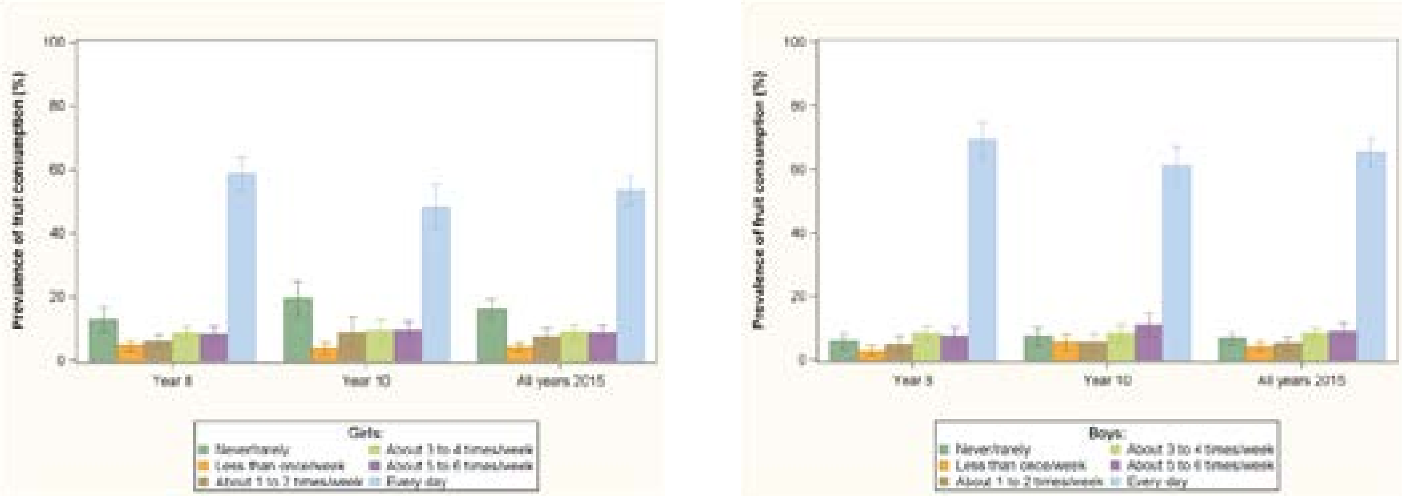
Table 6.17 and Figure 6.17 show the frequency of eating breakfast among adolescents in 2015, and in 2010 for comparison by sex and year group. Overall, 60% of adolescents ate breakfast every day and 12% never or rarely ate breakfast.

Table 6.17 Usual consumption of breakfast among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Never/rarely	9.4 (1.2)	13.5 (1.5)	11.5 (1.0)	7.0 (0.8)
Less than once/week	3.9 (0.6)	4.9 (0.8)	4.4 (0.4)	2.2 (0.4)
About 1 to 2 times/week	5.6 (0.7)	7.3 (1.4)	6.5 (0.8)	7.3 (0.7)
About 3 to 4 times/week	8.7 (0.8)	9.0 (0.9)	8.8 (0.7)	8.3 (0.6)
About 5 to 6 times/week	8.0 (1.0)	10.3 (1.2)	9.2 (0.7)	9.4 (0.6)
Every day	64.4 (1.9)	54.9 (2.3)	59.7 (1.7)	65.8 (1.2)
GIRLS				
Never/rarely	13.0 (1.9)	19.5 (2.7)	16.3 (1.6)	9.6 (1.2)
Less than once/week	4.8 (0.8)	4.0 (0.8)	4.4 (0.6)	3.2 (0.6)
About 1 to 2 times/week	6.1 (1.1)	9.0 (2.4)	7.6 (1.3)	7.9 (0.8)
About 3 to 4 times/week	8.8 (1.0)	9.4 (1.8)	9.1 (1.0)	10.5 (1.0)
About 5 to 6 times/week	8.5 (1.1)	9.5 (1.5)	9.0 (0.9)	9.6 (1.0)
Every day	58.9 (2.6)	48.5 (3.4)	53.7 (2.3)	59.1 (1.8)
BOYS				
Never/rarely	6.1 (1.2)	7.5 (1.5)	6.8 (0.9)	4.5 (0.7)
Less than once/week	3.1 (0.8)	5.7 (1.2)	4.4 (0.7)	1.3 (0.3)
About 1 to 2 times/week	5.1 (1.1)	5.7 (1.3)	5.4 (0.9)	6.8 (0.9)
About 3 to 4 times/week	8.6 (1.1)	8.6 (1.2)	8.6 (0.9)	6.2 (0.6)
About 5 to 6 times/week	7.5 (1.5)	11.2 (1.9)	9.3 (1.3)	9.2 (0.7)
Every day	69.6 (2.8)	61.3 (2.9)	65.5 (2.3)	72.0 (1.4)

Note: No significance testing was conducted.

Figure 6.17 Usual consumption of breakfast among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



EATING BREAKFAST DAILY

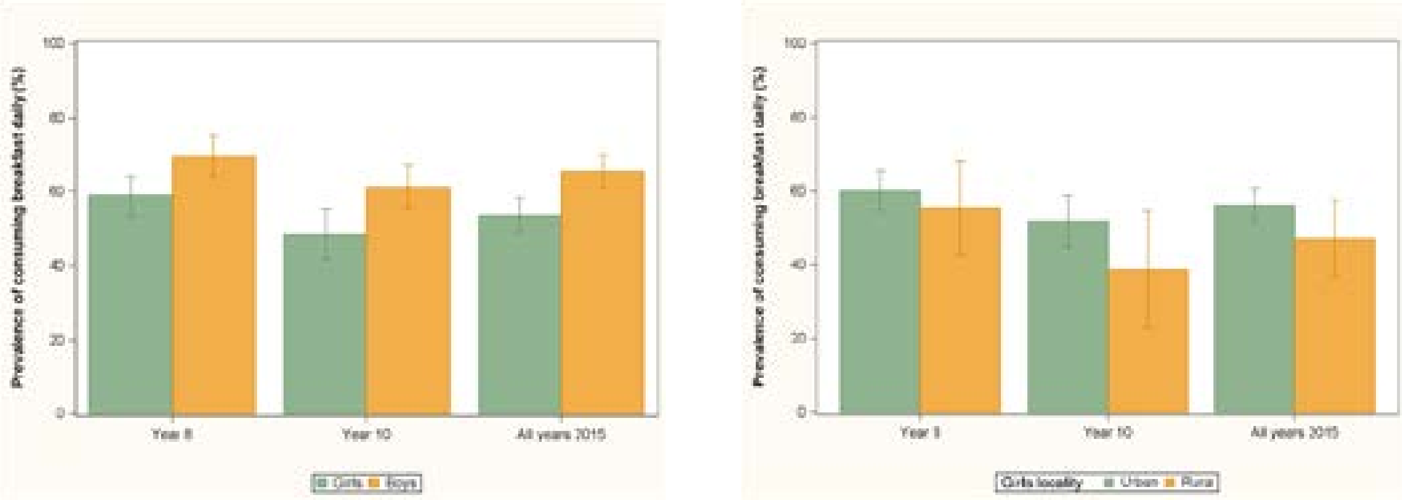
Table 6.18 and Figure 6.18 show the prevalence of eating breakfast daily among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 60% of adolescents ate breakfast daily and the prevalence was significantly lower among girls (54%), compared with boys (66%). The prevalence of eating daily breakfast has significantly decreased among adolescents overall from 66% in 2010 to 60% in 2015, and among boys from 72% in 2010 to 66% in 2015.

Table 6.18 Prevalence of eating breakfast daily among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Eats breakfast daily	64.4 (1.9)	54.9 (2.3)	59.7 (1.7)	**65.8 (1.2) b**
Does not eat breakfast daily	35.6 (1.9)	45.1 (2.3)	40.3 (1.7)	34.2 (1.2)
GIRLS				
Eats breakfast daily	**58.9 (2.6) a**	**48.5 (3.4) a**	**53.7 (2.3) a**	59.1 (1.8)
Does not eat breakfast daily	41.1 (2.6)	51.5 (3.4)	46.3 (2.3)	40.9 (1.8)
BOYS				
Eats breakfast daily	69.6 (2.8)	61.3 (2.9)	65.5 (2.3)	**72.0 (1.4) b**
Does not eat breakfast daily	30.4 (2.8)	38.7 (2.9)	34.5 (2.3)	28.0 (1.4)

a *Indicates statistically significant difference at P < 0.05. Comparisons are between boys and girls within each year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each category.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 6.18 Prevalence of eating breakfast daily among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 60% of adolescents in secondary school eat breakfast daily while two in five (20%) do not eat breakfast daily. Table 6.19 and Figure 6.19 show the prevalence of eating breakfast daily among adolescents by sex, year group, socio-demographic characteristics, and BMI category in 2015, and in 2010 for comparison.

Locality

2015: There were no significant differences in daily breakfast consumption between adolescents in rural and urban areas.

Change between 2010-2015: The prevalence of eating breakfast daily significantly decreased among adolescents from urban areas, from 66% in 2010 to 61% in 2015, and among boys in urban areas, from 72% in 2010 to 66% in 2015.

Socio-economic status

2015: Overall, the prevalence of eating breakfast daily was significantly lower among adolescents from low SES (55%) and middle SES (56%) backgrounds, compared with adolescents from high SES (68%) backgrounds. The prevalence was significantly lower among girls from low SES (48%) and middle SES (50%) backgrounds, compared with girls from high SES backgrounds (63%); and among boys from low SES (62%) and middle SES (62%) backgrounds, compared with boys from high SES backgrounds (73%).

Change between 2010-2015: Overall, the prevalence of daily breakfast consumption significantly decreased among adolescents from middle SES backgrounds from 65% in 2010 to 56% in 2015, and among boys from middle SES backgrounds from 72% in 2010 to 62% in 2015.

Cultural background

2015: There were no significant differences in daily breakfast consumption between adolescents from different cultural backgrounds.

Change between 2010-2015: Overall, the prevalence of eating breakfast daily significantly decreased among adolescents from English-speaking backgrounds, from 67% in 2010 to 60% in 2015; and among boys from English-speaking backgrounds, from 73% in 2010 to 66% in 2015.

Weight status

2015: Overall, the prevalence of eating breakfast daily was significantly lower among adolescents in the overweight BMI category (53%), compared with adolescents in the healthy weight BMI category (62%). The prevalence was significantly lower among boys in the overweight (59%) and obese (51%) BMI categories, compared with boys in the healthy weight BMI category (68%).

Change between 2010-2015: Overall, the prevalence of eating breakfast daily significantly decreased among adolescents in the overweight BMI category, from 63% in 2010 to 53% in 2015. The prevalence significantly decreased among girls in the overweight BMI category, from 59% in 2010 to 47% in 2015; and among boys in the healthy weight BMI category from 74% in 2010 to 68% in 2015.

Table 6.19 Prevalence of eating breakfast daily among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year K	Year 10	All years	All years
ALL				
Locality				
Urban (ref)	64.8 (2.0)	56.3 (2.6)	60.5 (1.8)	**66.1 (1.3) b**
Rural	63.3 (4.6)	51.4 (4.8)	57.3 (4.2)	64.8 (3.3)
SES				
Low	**59.6 (2.9) a**	**50.9 (3.1) a**	**55.1 (2.6) a**	60.2 (2.8)
Middle	**62.8 (3.4) a**	**49.5 (3.2) a**	**56.2 (2.4) a**	**65.3 (1.7) b**
High (ref)	70.6 (2.1)	64.9 (4.1)	67.8 (2.4)	71.0 (1.8)
Cultural background				
English-speaking (ref)	64.9 (2.1)	55.2 (2.7)	60.1 (2.0)	**66.8 (1.2) b**
European	75.7 (8.2)	52.1 (11.0)	63.4 (6.8)	68.0 (6.4)
Middle Eastern	60.3 (7.3)	42.4 (12.1)	51.9 (8.7)	48.9 (7.7)
Asian	65.7 (3.9)	59.4 (5.9)	62.0 (4.2)	62.6 (4.3)
BMI category				
Thin	70.0 (5.6)	65.6 (6.8)	68.0 (4.2)	70.8 (4.0)
Healthy weight (ref)	66.1 (2.2)	58.0 (2.6)	62.0 (2.0)	66.5 (1.3)
Overweight	**58.6 (3.4) a**	**46.9 (4.1) a**	**52.8 (2.9) a**	**63.0 (2.7) b**
Obese	59.2 (8.7)	**40.0 (7.9) a**	50.1 (6.2)	58.0 (5.1)
GIRLS				
Locality				
Urban (ref)	60.2 (2.7)	51.9 (3.5)	56.0 (2.4)	59.9 (2.0)
Rural	55.3 (6.2)	38.7 (7.9)	47.1 (5.1)	56.4 (4.7)
SES				
Low	**51.5 (4.5) a**	44.9 (5.1)	**48.2 (3.7) a**	55.1 (4.0)
Middle	57.7 (3.6)	**42.3 (4.8) a**	**49.8 (2.8) a**	57.3 (2.6)
High (ref)	67.5 (3.5)	57.9 (6.0)	62.7 (3.3)	64.2 (2.2)
Cultural background				
English-speaking (ref)	59.7 (2.9)	48.6 (4.1)	54.1 (2.6)	60.4 (1.8)
European	76.9 (8.9)	50.6 (19.3)	67.5 (10.0)	63.4 (10.0)
Middle Eastern	45.7 (8.0)	31.8 (18.1)	39.6 (8.5)	40.4 (9.7)
Asian	60.5 (6.8)	53.2 (6.3)	56.2 (5.1)	51.1 (6.3)
BMI category				
Thin	54.9 (8.6)	63.4 (10.6)	58.5 (6.0)	66.1 (6.2)
Healthy weight (ref)	60.8 (3.6)	50.9 (4.2)	55.7 (3.1)	59.1 (1.8)
Overweight	54.4 (4.3)	39.4 (6.1)	46.8 (4.1)	**59.1 (3.8) b**
Obese	57.1 (9.9)	39.9 (11.3)	49.6 (7.1)	45.5 (6.5)

	2015			2010
	Year K	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	69.2 (3.0)	61.0 (3.4)	65.2 (2.5)	**71.9 (1.6) b**
Rural	70.4 (5.8)	62.1 (5.3)	66.2 (4.7)	72.5 (2.6)
SES				
Low	67.9 (4.4)	**56.5 (4.2) a**	**61.8 (3.6) a**	64.9 (2.8)
Middle	67.2 (4.8)	**56.5 (3.8) a**	**62.0 (3.5) a**	**72.3 (1.9) b**
High (ref)	73.7 (3.1)	72.7 (4.0)	73.2 (2.7)	77.8 (2.0)
Cultural background				
English-speaking (ref)	69.8 (2.9)	61.6 (3.0)	65.8 (2.5)	**72.8 (1.2) b**
European	72.1 (23.8)	53.1 (13.2)	58.2 (13.6)	70.9 (7.4)
Middle Eastern	72.7 (9.2)	49.3 (15.7)	60.9 (10.9)	61.1 (7.9)
Asian	72.8 (8.4)	68.7 (8.1)	70.5 (7.1)	69.7 (4.7)
BMI category				
Thin	**85.5 (5.0) a**	67.6 (8.8)	76.9 (5.5)	77.8 (5.0)
Healthy weight (ref)	71.2 (2.7)	65.4 (2.8)	68.3 (2.1)	**73.5 (1.6) b**
Overweight	**62.3 (5.0) a**	54.3 (6.6)	**58.5 (4.2) a**	66.1 (2.9)
Obese	61.4 (12.6)	**40.1 (11.6) a**	**50.6 (9.4) a**	65.5 (6.2)

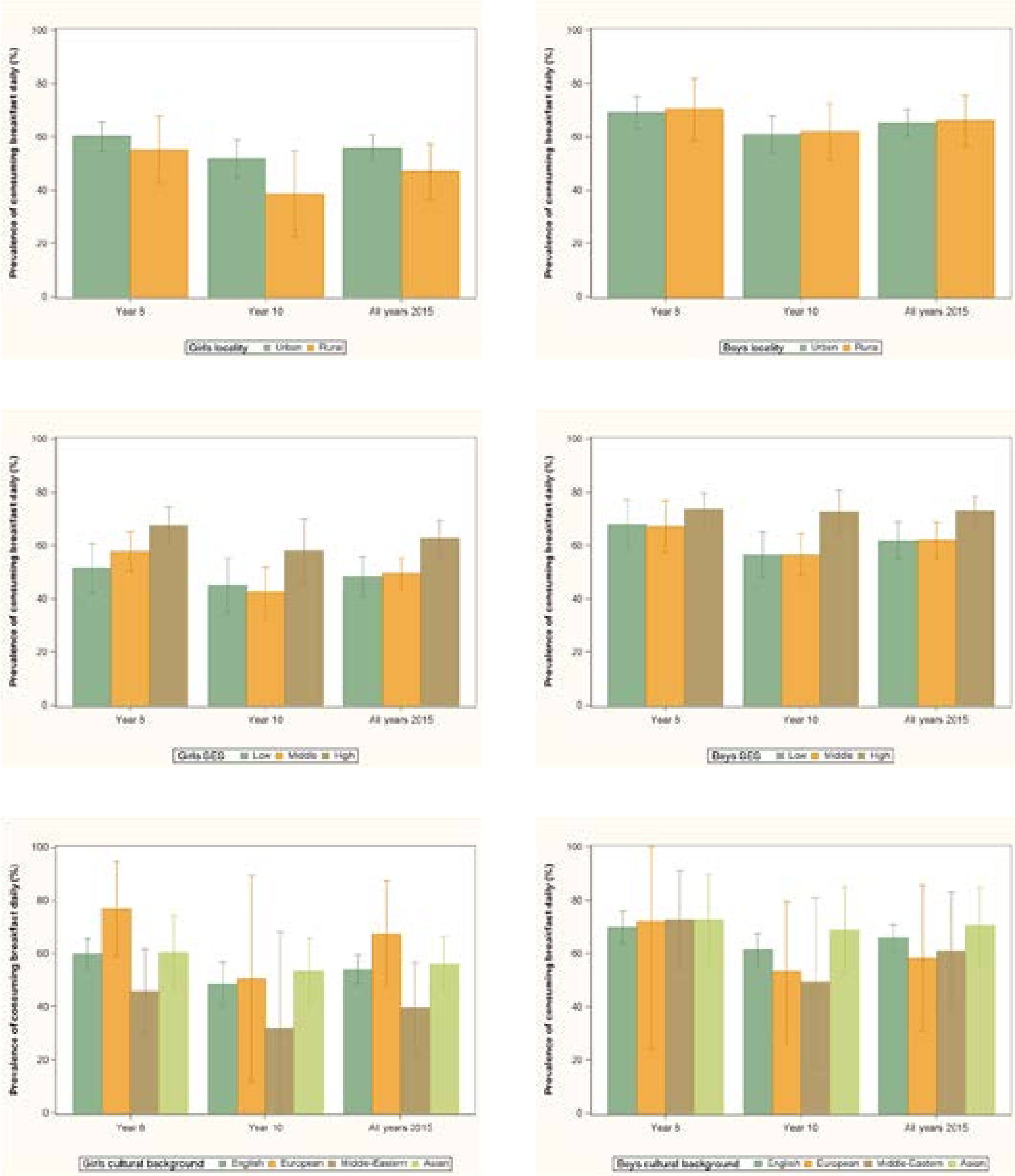
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

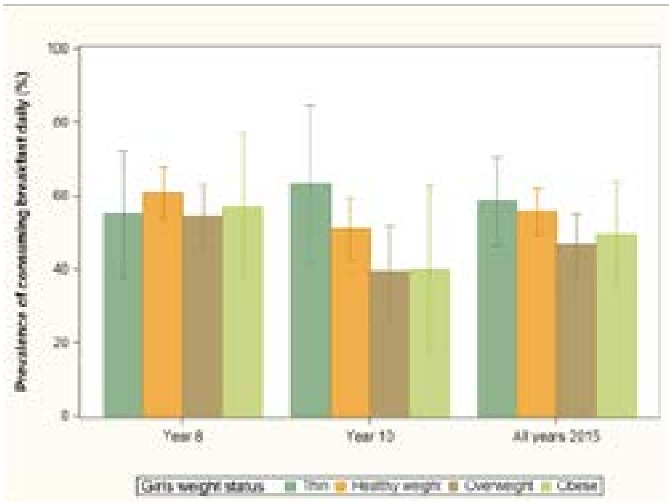
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

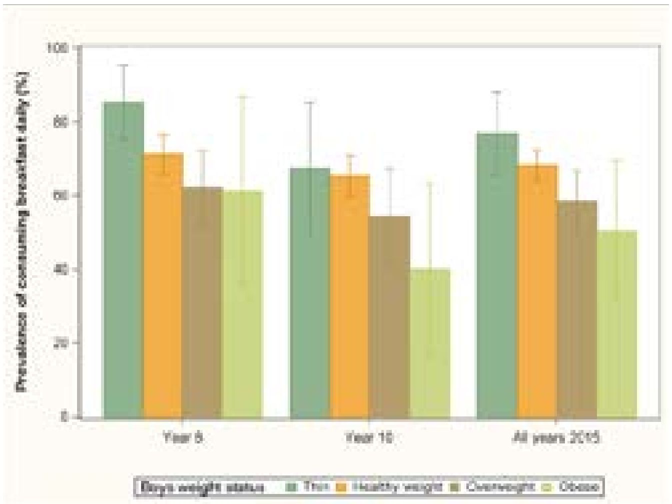
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 6.19 Prevalence of eating breakfast daily among adolescents in secondary school by sex year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)







EATING DINNER IN FRONT OF THE TV

Watching TV during mealtimes is a prevalent behaviour and has been associated with poorer diet quality and with a higher body mass index.[13] The mechanisms driving these associations are the influence of targeted TV advertising of processed food and high energy beverages at adolescents,[14] leading to requests for these items[15], and the sedentary nature of sitting and watching TV. Both watching TV and eating in front of the TV are positively and independently associated with overweight.[16] Adolescents consuming one or more dinners in front of the TV per week are more likely to have a higher BMI and the negative effect on young peoples' diets increases with each night that dinner is eaten in front of the TV.[17] While there are no health-related recommendations on the frequency of eating meals in front of the TV, the evidence consistently shows that this eating behaviour is associated with a poor diet and unhealthy weight gain.[18]

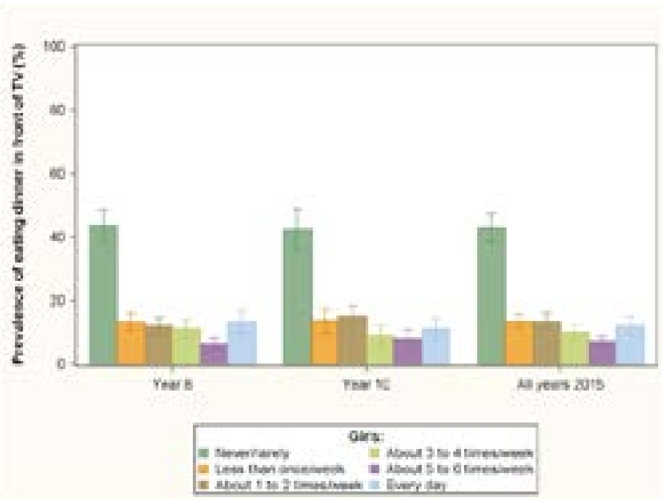
Table 6.20 and Figure 6.20 show the frequency of eating dinner in front of the TV among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 41% of adolescents never or rarely ate dinner in front of the TV and 14% ate dinner in front of the TV every night.

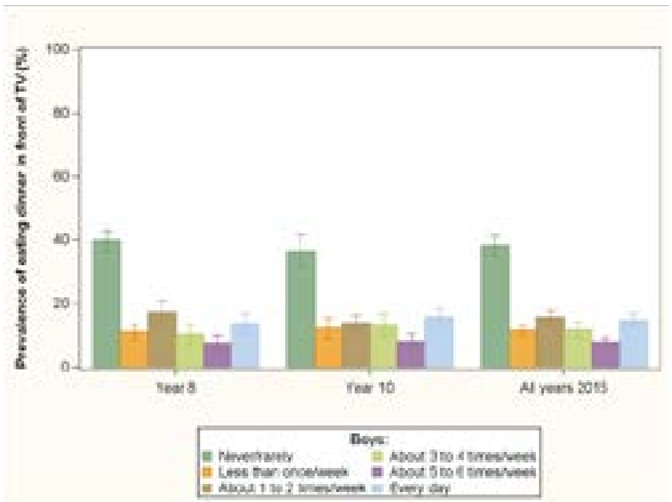
Table 6.20 Prevalence of eating dinner in front of the TV among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Never/rarely	41.7 (1.5)	39.6 (2.0)	40.6 (1.3)	35.0 (1.2)
Less than once/week	12.2 (0.9)	13.0 (1.4)	12.6 (0.8)	11.4 (0.6)
About 1 to 2 times/week	14.8 (1.0)	14.5 (1.0)	14.7 (0.7)	15.8 (0.9)
About 3 to 4 times/week	10.7 (1.1)	11.2 (1.0)	10.9 (0.9)	14.4 (0.7)
About 5 to 6 times/week	7.0 (0.9)	8.2 (1.0)	7.6 (0.6)	7.6 (0.6)
Every day	13.6 (1.2)	13.5 (1.2)	13.5 (1.0)	15.8 (1.0)
GIRLS				
Never/rarely	43.7 (2.5)	42.6 (3.1)	43.1 (2.2)	38.3 (1.8)
Less than once/week	13.3 (1.4)	13.8 (1.9)	13.5 (1.1)	12.6 (1.0)
About 1 to 2 times/week	12.2 (1.3)	15.1 (1.8)	13.6 (1.3)	15.9 (1.3)
About 3 to 4 times/week	11.1 (1.5)	9.1 (1.6)	10.1 (1.2)	12.2 (0.9)
About 5 to 6 times/week	6.5 (1.0)	8.2 (1.3)	7.3 (0.8)	6.7 (0.9)
Every day	13.3 (1.8)	11.2 (1.7)	12.3 (1.4)	14.3 (1.4)
BOYS				
Never/rarely	39.8 (1.6)	36.5 (2.5)	38.2 (1.6)	32.0 (1.4)
Less than once/week	11.1 (1.2)	12.3 (1.7)	11.7 (0.9)	10.2 (0.8)
About 1 to 2 times/week	17.4 (1.8)	14.0 (1.2)	15.7 (1.1)	15.8 (1.0)
About 3 to 4 times/week	10.3 (1.7)	13.3 (1.8)	11.8 (1.3)	16.4 (1.1)
About 5 to 6 times/week	7.6 (1.2)	8.1 (1.2)	7.9 (0.8)	8.4 (0.8)
Every day	13.8 (1.6)	15.8 (1.4)	14.8 (1.1)	17.2 (1.1)

Note: No significance testing was conducted.

Figure 6.20 Prevalence of eating dinner in front of the TV among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





EATING DINNER IN FRONT OF THE TV FIVE OR MORE TIMES A WEEK

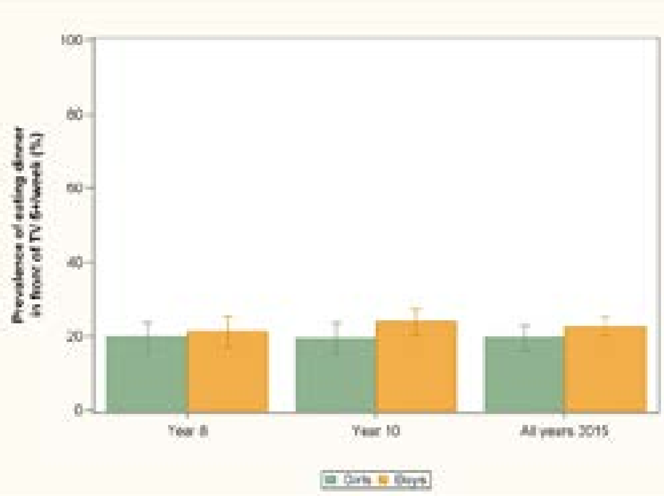
One in five adolescents (21%) ate dinner in front of the TV five or more times a week. Table 6.21 and Figure 6.21 show the prevalence of eating dinner in front of the TV five or more times per week among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 21% of adolescents ate dinner five or more times a week in front of the TV. There were no significant differences in the prevalence between boys and girls or between 2010 and 2015.

Table 6.21 Prevalence of eating dinner in front of the TV five or more times per week among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Dinner in front of TV ≥ 5/week	20.6 (1.4)	21.7 (1.5)	21.2 (1.1)	23.3 (0.9)
Dinner in front of TV < 5/week	79.4 (1.4)	78.3 (1.5)	78.8 (1.1)	76.7 (0.9)
GIRLS				
Dinner in front of TV ≥ 5/week	19.8 (2.0)	19.4 (2.2)	19.6 (1.7)	21.0 (1.4)
Dinner in front of TV < 5/week	80.2 (2.0)	80.6 (2.2)	80.4 (1.7)	79.0 (1.4)
BOYS				
Dinner in front of TV ≥ 5/week	21.4 (2.0)	24.0 (1.8)	22.7 (1.3)	25.6 (1.1)
Dinner in front of TV < 5/week	78.6 (2.0)	76.0 (1.8)	77.3 (1.3)	74.4 (1.1)

a *Indicates statistically significant difference at P < 0.05. Comparisons are between boys and girls within each year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each category.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 6.21 Prevalence of eating dinner in front of the TV five or more times per week, among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately one in five (21%) adolescents in secondary school ate dinner in front of the TV five or more times a week. Table 6.22 and Figure 6.22 show the prevalence of eating dinner in front of the TV five or more times a week among adolescents stratified by sex, year group, socio-demographic characteristics, and BMI category, in 2015 and in 2010 for comparison.

Locality

2015: Overall, there were no differences in the prevalence of eating dinner in front of the TV five or more times a week between adolescents from urban and rural areas.

Change between 2010-2015: There were no changes in the prevalence of eating dinner in front of the TV five or more times a week among adolescents from urban or from rural areas.

Socio-economic status

2015: Overall, the prevalence of eating dinner in front of the TV five or more times a week was significantly higher among adolescents from low SES (23%) and middle SES (24%) backgrounds, compared with adolescents from high SES (17%) backgrounds. The prevalence was significantly higher among boys from low SES (26%) and middle SES (26%) backgrounds, compared with boys from high SES (16%) backgrounds.

Change between 2010-2015: Overall, the prevalence of eating dinner in front of the TV five or more times a week significantly decreased among boys from high SES backgrounds from 23% in 2010 to 16% in 2015.

Cultural background

2015: Overall, the prevalence of eating dinner in front of the TV five or more times a week was significantly higher among girls from Middle Eastern cultural backgrounds (37%), compared with girls from English-speaking backgrounds (19%).

Change between 2010-2015: The prevalence of eating dinner in front of the TV five or more times a week significantly decreased among girls from Asian cultural backgrounds, from 34% in 2010 to 23% in 2015.

Weight status

2015: There were no significant differences in the prevalence of eating dinner in front of the TV five or more times a week between adolescents from different BMI categories.

Change between 2010-2015: Overall, the prevalence of eating dinner in front of the TV five or more times a week among adolescents significantly decreased among boys in the healthy weight BMI category, from 26% in 2010 to 22% in 2015.

Table 6.22 Prevalence of eating dinner in front of the TV five or more times a week among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Locality				
Urban (ref)	22.1 (1.7)	21.6 (1.8)	21.9 (1.4)	23.7 (1.1)
Rural	16.6 (2.7)	22.0 (2.9)	19.3 (2.0)	22.1 (1.8)
SES				
Low	**22.9 (2.2) a**	22.4 (2.5)	**22.6 (1.7) a**	24.4 (1.6)
Middle	22.9 (3.0)	**24.7 (2.1) a**	**23.8 (2.0) a**	24.9 (1.9)
High (ref)	16.2 (2.1)	17.9 (2.4)	17.0 (1.5)	20.9 (1.5)
Cultural background				
English-speaking (ref)	20.0 (1.6)	21.3 (1.7)	20.6 (1.3)	23.1 (1.0)
European	15.8 (10.1)	12.6 (7.1)	14.1 (5.1)	16.5 (5.3)
Middle Eastern	26.7 (6.6)	28.6 (12.7)	27.6 (7.4)	24.0 (3.6)
Asian	26.2 (4.4)	26.3 (5.1)	26.3 (3.4)	29.9 (3.4)
BMI category				
Thin	18.6 (4.7)	26.0 (6.0)	22.0 (3.5)	29.4 (4.2)
Healthy weight (ref)	20.1 (1.5)	21.5 (2.0)	20.8 (1.2)	23.6 (1.3)
Overweight	20.7 (3.0)	22.8 (3.5)	21.7 (2.4)	21.2 (1.8)
Obese	27.2 (6.0)	16.4 (5.3)	21.9 (4.4)	17.6 (4.3)
GIRLS				
Locality				
Urban (ref)	22.1 (2.3)	20.5 (2.5)	21.3 (2.1)	21.5 (1.6)
Rural	13.2 (3.8)	16.3 (4.6)	14.7 (3.0)	19.3 (2.4)
SES				
Low	18.6 (3.0)	20.5 (3.8)	19.6 (2.4)	22.3 (2.1)
Middle	21.5 (4.0)	21.4 (3.3)	21.5 (3.2)	21.7 (2.5)
High (ref)	19.5 (3.4)	16.6 (3.3)	18.0 (2.8)	19.3 (2.2)
Cultural background				
English-speaking (ref)	19.2 (2.2)	18.4 (2.5)	18.8 (1.9)	20.2 (1.4)
European	11.9 (6.3)	11.1 (8.7)	11.6 (5.8)	11.6 (6.0)
Middle Eastern	33.2 (8.9)	**42.0 (15.5) a**	**37.0 (9.3) a**	26.7 (4.3)
Asian	21.8 (3.3)	23.9 (6.2)	23.1 (3.5)	**33.8 (5.6) b**
BMI category				
Thin	15.0 (6.9)	17.0 (7.3)	15.9 (5.0)	29.1 (6.0)
Healthy weight (ref)	20.2 (2.5)	19.4 (2.5)	19.8 (1.9)	20.8 (1.6)
Overweight	16.7 (3.9)	22.5 (5.1)	19.7 (3.3)	18.6 (2.6)
Obese	29.8 (8.4)	10.3 (5.5)	20.7 (5.6)	11.2 (4.1)

	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	22.1 (2.6)	22.8 (2.1)	22.4 (1.6)	25.9 (1.3)
Rural	19.6 (3.4)	26.8 (3.3)	23.2 (2.2)	24.6 (2.5)
SES				
Low	**27.1 (3.6) a**	24.2 (3.1)	**25.6 (2.2) a**	26.4 (2.0)
Middle	**24.1 (3.5) a**	**27.9 (3.1) a**	**26.0 (2.2) a**	27.7 (2.2)
High (ref)	13.0 (2.6)	19.5 (2.9)	16.0 (1.5)	**22.5 (1.7) b**
Cultural background				
English-speaking (ref)	20.7 (2.1)	24.0 (1.9)	22.3 (1.4)	25.8 (1.3)
European	27.9 (23.8)	13.6 (10.5)	17.4 (7.3)	19.6 (7.8)
Middle Eastern	21.3 (9.4)	20.0 (13.1)	20.7 (7.8)	20.0 (6.7)
Asian	32.2 (9.5)	30.2 (6.7)	31.1 (5.5)	27.4 (4.1)
BMI category				
Thin	22.3 (6.5)	33.7 (8.2)	27.8 (5.0)	29.8 (5.6)
Healthy weight (ref)	20.0 (2.3)	23.7 (2.4)	21.8 (1.4)	**26.3 (1.6) b**
Overweight	24.3 (4.8)	23.1 (4.3)	23.7 (3.2)	23.2 (2.7)
Obese	24.3 (8.9)	22.0 (9.0)	23.1 (5.9)	21.6 (6.5)

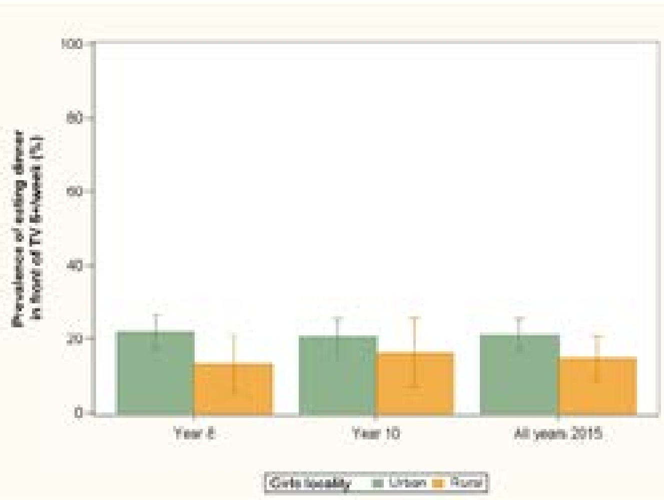
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

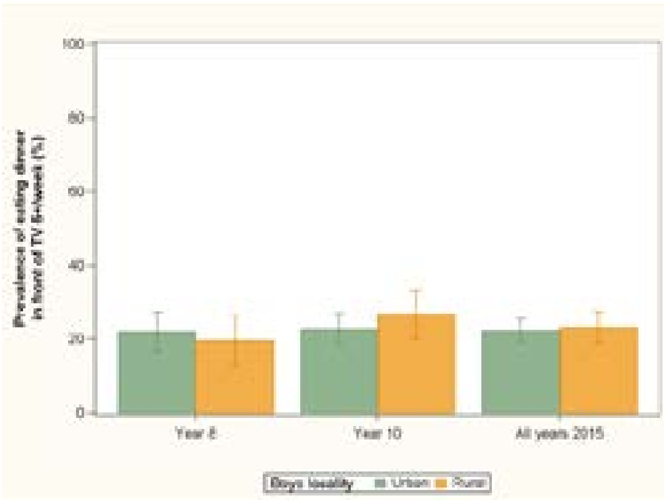
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

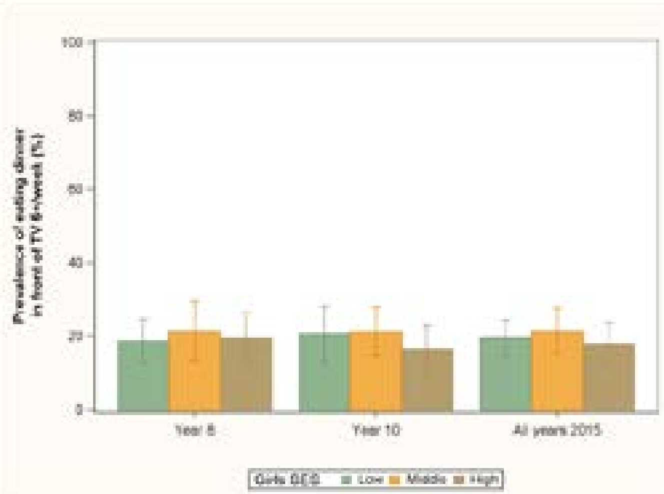
na *Indicates statistical significance could not be calculated due to low numbers.*

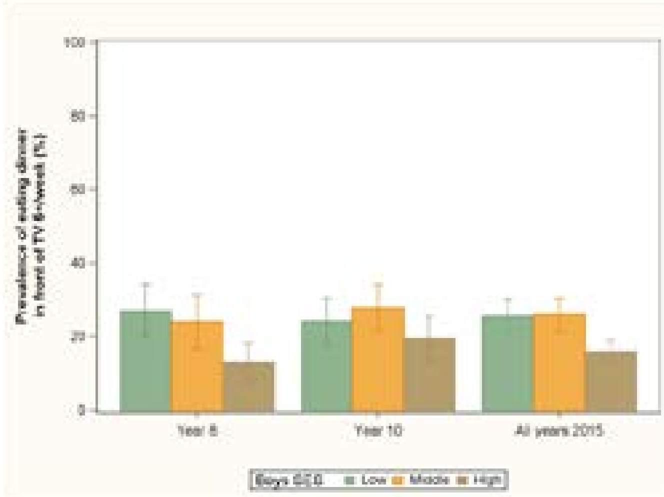
No letter means there was no statistical difference.

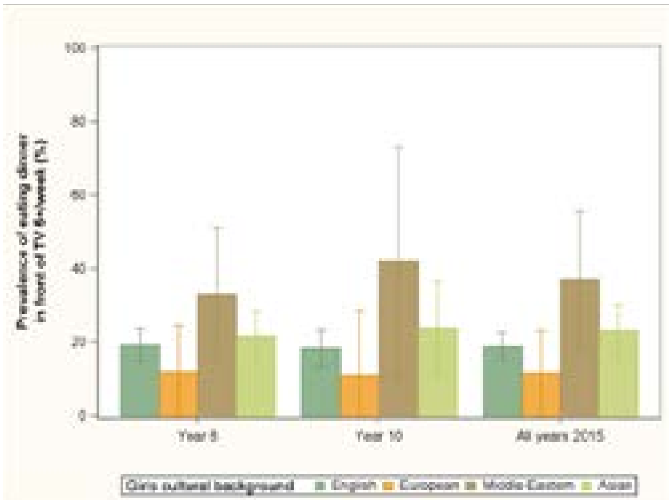
Figure 6.22 Prevalence of eating dinner in front of the TV five or more times a week among adolescents in secondary school by sex, year group, socio-demographic characteristics, and BMI category in 2015 (%, 95%CI)

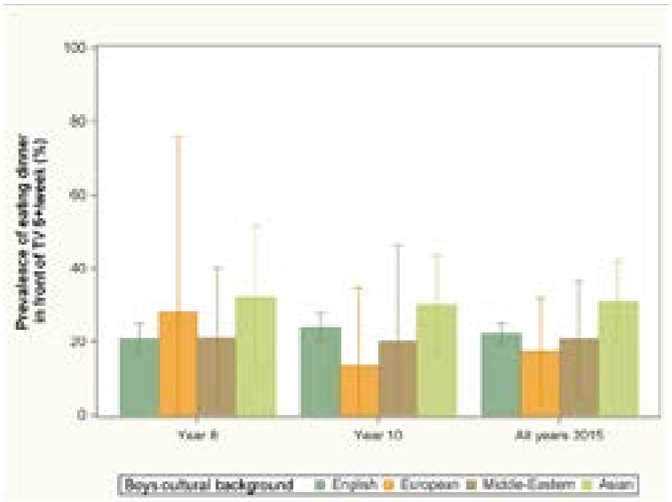


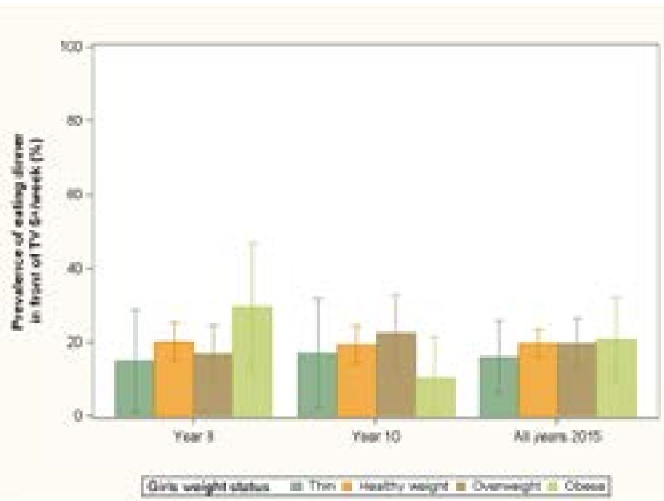


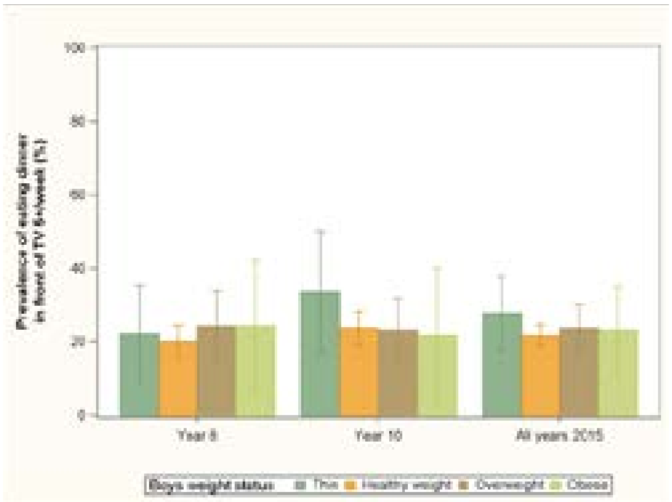

Prevalence of eating dinner in front of TV 5+/week (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls SES Low Middle High


Prevalence of eating dinner in front of TV 5+/week (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys SES Low Middle High


Prevalence of eating dinner in front of TV 5+/week (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls cultural background English European Middle-Eastern Asian


Prevalence of eating dinner in front of TV 5+/week (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys cultural background English European Middle-Eastern Asian


Prevalence of eating dinner in front of TV 5+/week (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Prevalence of eating dinner in front of TV 5+/week (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

BEING OFFERED SWEETS AS A REWARD FOR GOOD BEHAVIOUR

Using food, sweets in particular, to reward adolescents for behaviour (i.e., instrumental feeding) is a commonplace and effective strategy used by parents,[19] despite evidence indicating that using food as a reward could be associated with long-term negative health consequences, including overeating and increasing intake of unhealthy foods, and shaping future eating habits.[20, 21] Sweets such as chocolate and confectionery contribute excess energy, fat and sugar to adolescents' diets and provide few positive nutrients such as vitamins and minerals.[22]

Furthermore, if sweets are given as a reward food to adolescents for eating their fruit or vegetables, adolescents may learn to place less value on fruit and vegetables.[23] Australia does not have a specific statement regarding this behaviour, but a position statement by the American Academy of Pediatrics states that *'food should be used as nourishment, not as a reward or punishment'*.[24]

The SPANS question on the use of sweets as a reward for good behaviour comes from the Parental Feeding Style Questionnaire (original Cronbach $\alpha = 0.67$, indicating acceptable internal consistency of the measure).[25]

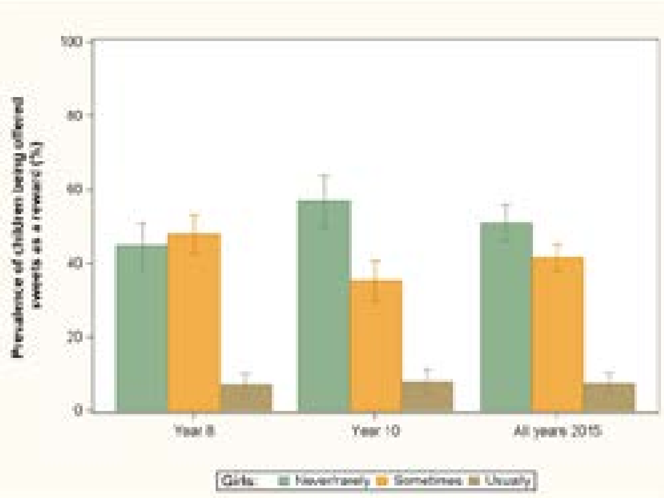
Table 6.23 and Figure 6.23 show the prevalence of parents offering sweets as a reward for good behaviour, among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 54% of adolescents were 'never or rarely' offered sweets for good behaviour and 6% were 'usually' offered sweets for good behaviour. The frequency of parents 'usually' offering sweets as a reward for good behaviour appeared to be slightly higher among girls (8%) compared with boys (5%). Overall, the prevalence of usually being offered sweets as a reward for good behaviour appeared to be similar between 2010 (7%) and 2015 (6%).

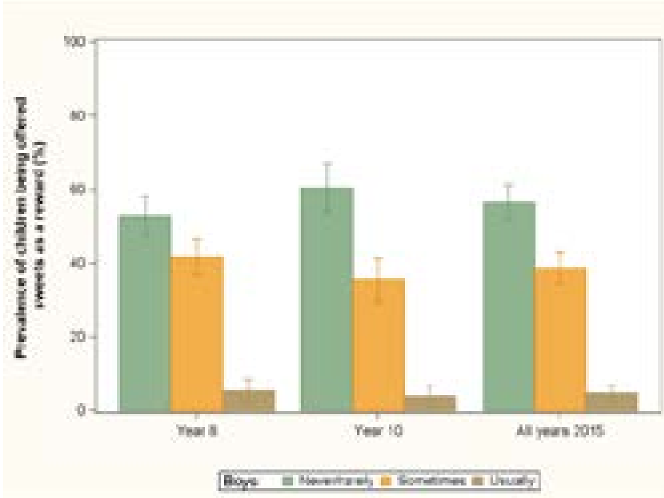
Table 6.23 Prevalence of being offered sweets as a reward for good behaviour among adolescents in secondary school by sex and year group in 2015 and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Never/rarely	48.9 (2.0)	58.6 (2.5)	53.8 (1.9)	59.0 (1.6)
Sometimes	44.7 (1.7)	35.4 (2.0)	40.0 (1.5)	34.3 (1.4)
Usually	6.4 (1.2)	5.9 (1.2)	6.2 (1.0)	6.6 (0.6)
GIRLS				
Never/rarely	44.9 (3.0)	56.8 (3.4)	50.9 (2.5)	56.6 (2.5)
Sometimes	47.8 (2.6)	35.3 (2.7)	41.5 (1.9)	35.3 (2.0)
Usually	7.3 (1.4)	7.9 (1.6)	7.6 (1.3)	8.2 (1.0)
BOYS				
Never/rarely	52.8 (2.6)	60.5 (3.3)	56.6 (2.3)	61.3 (2.0)
Sometimes	41.7 (2.4)	35.6 (2.9)	38.6 (2.1)	33.5 (1.9)
Usually	5.5 (1.5)	4.0 (1.4)	4.8 (1.1)	5.2 (0.7)

Note: No significance testing was conducted.

Figure 6.23 Prevalence of adolescents being offered sweets as a reward for good behaviour among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





SOFT DRINK AVAILABILITY IN THE HOME

The term 'soft drink' refers to carbonated beverages or sugar-sweetened soft drink. Soft drinks provide substantial energy with little or no nutritional value and reducing consumption of these sugar-sweetened beverages (SSBs) has been targeted in obesity prevention and public health nutrition.[26] Frequent soft drink consumption replaces healthier foods in the diet (such as milk) and may increase the risk of obesity, type 2 diabetes, dental caries and bone fractures.[27, 28]

National dietary intake data shows over 60% of SSBs are consumed at home[29] and adolescents who had soft drink available at home were almost five times as likely to be high consumers of soft drink.[30] Adolescents age 14-18 years are the highest consumers of SSBs in Australia.[31] The Australian Dietary Guide recommends limiting intakes of [foods and] drinks containing added sugar.[12]

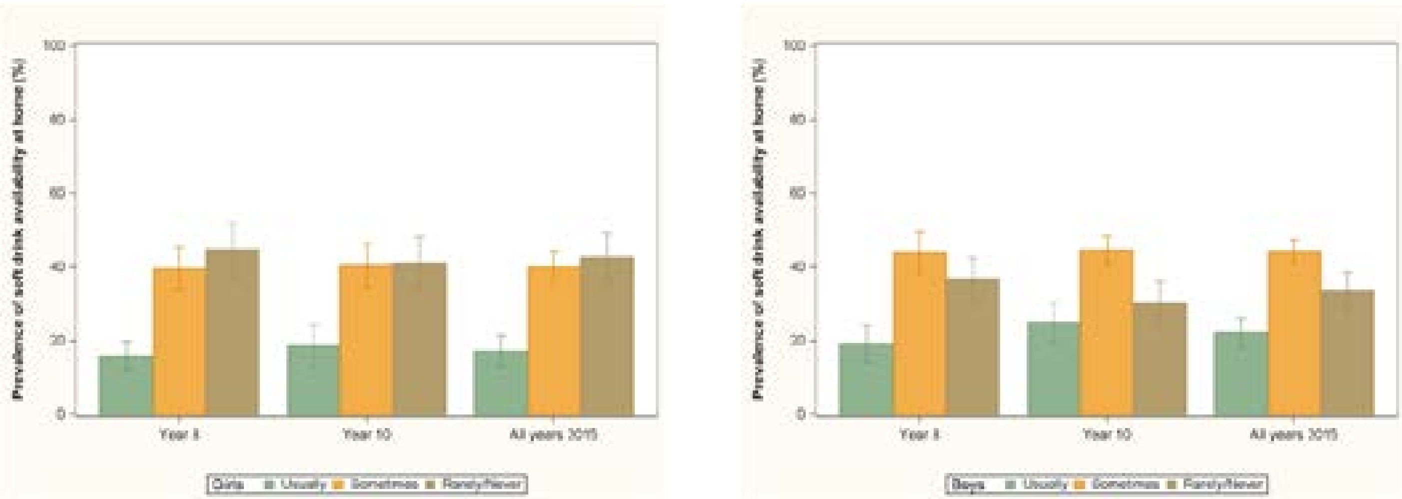
Table 6.24 and Figure 6.24 show the prevalence of soft drink availability in the home among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 20% of adolescents usually had soft drinks available in the home and 38% never or rarely had soft drinks available in the home. The availability of soft drinks in the home appeared to be slightly higher among boys compared with girls, and the prevalence appears to have decreased from 31% in 2010 to 20% in 2015.

Table 6.24 Prevalence of soft drink availability in the home among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Usually	17.6 (1.7)	21.8 (2.1)	19.7 (1.6)	31.2 (1.6)
Sometimes	41.8 (2.1)	42.4 (1.7)	42.1 (1.4)	38.8 (1.2)
Rarely/never	40.6 (2.5)	35.7 (2.4)	38.2 (2.2)	30.0 (1.6)
GIRLS				
Usually	15.8 (2.0)	18.6 (2.8)	17.2 (2.2)	30.0 (2.5)
Sometimes	39.6 (2.9)	40.4 (2.9)	40.0 (2.1)	37.7 (1.7)
Rarely/never	44.6 (3.7)	41.1 (3.6)	42.8 (3.2)	32.3 (2.2)
BOYS				
Usually	19.3 (2.5)	25.1 (2.7)	22.2 (2.0)	32.3 (1.7)
Sometimes	44.0 (2.8)	44.5 (2.0)	44.2 (1.6)	39.9 (1.6)
Rarely/never	36.8 (2.9)	30.4 (2.9)	33.6 (2.4)	27.8 (1.8)

Note: No significance testing was conducted.

Figure 6.24 Prevalence of soft drink availability in the home among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately one in five (20%) adolescents in secondary school usually have soft drinks available in the home. Table 6.25 and Figure 6.25 show the prevalence of usually having soft drinks available in the home among adolescents stratified by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: There were no significant differences in the prevalence of usually having soft drinks available in the home between adolescents from urban and rural areas.

Change between 2010-2015: Overall, the prevalence of usually having soft drinks available in the home significantly decreased among adolescents from urban areas, from 31% in 2010 to 21% in 2015; and from rural areas, from 33% in 2010 to 18% in 2015. The prevalence decreased among girls from urban areas, from 29% in 2010 to 18% in 2015; and from rural areas, from 34% in 2010 to 14% in 2015. The prevalence decreased among boys in urban areas, from 32% in 2010 to 23% in 2015; and among boys in rural areas, from 32% in 2010 to 21% in 2015.

Socio-economic status

2015: Overall, the prevalence of usually having soft drinks available in the home was significantly higher among adolescents from low SES (24%), compared with adolescents from high SES backgrounds (16%). The prevalence was significantly higher among boys from low SES (29%), compared with boys from high SES backgrounds (18%).

Change between 2010-2015: Overall, the prevalence of usually having soft drinks available in the home significantly decreased among adolescents from low SES backgrounds, from 36% in 2010 to 24% in 2015; from middle SES backgrounds, from 35% in 2010 to 18% in 2015; and from high SES backgrounds, from 24% in 2010 to 16% in 2015. The prevalence significantly decreased among girls from low SES (from 38% in 201 to 20% in 2015), middle SES (from 33% in 2010 to 18% in 2015) backgrounds, and among boys from middle SES backgrounds (from 37% to 19% in 2015).

Cultural background

2015: Overall, the prevalence of usually having soft drinks available in the home was significantly higher among adolescents from European (51%) and Middle Eastern cultural backgrounds (37%), compared with adolescents from English-speaking backgrounds (19%). The prevalence was significantly higher among girls from European (45%) and Middle Eastern cultural backgrounds (30%), compared with girls from English-speaking backgrounds (17%); and among boys from European (59%) and Middle Eastern cultural backgrounds (42%), compared with boys from English-speaking backgrounds (21%).

Change between 2010-2015: Overall, the prevalence of usually having soft drinks available in the home significantly decreased among adolescents from English-speaking backgrounds, from 31% in 2010 to 19% in 2015; and among adolescents from Asian cultural backgrounds, from 29% in 2010 to 16% in 2015. The prevalence significantly decreased among girls from English-speaking backgrounds, from 29% in 2010 to 17% in 2015; and from Asian cultural backgrounds, from 31% in 2010 to 15% in 2015; and among boys from English-speaking backgrounds, from 33% in 2010 to 21% in 2015.

Weight status

2015: There were no significant differences in usually having soft drinks available in the home between adolescents from different BMI categories.

Change between 2010-2015: Overall, the prevalence of usually having soft drinks available in the home significantly decreased among adolescents in the thin BMI category, from 34% in 2010 to 20% in 2015; in the healthy weight BMI category, from 31% in 2010 to 19% in 2015; and in the overweight BMI category, from 31% in 2010 to 21% in 2015. The prevalence significantly decreased in the healthy weight BMI category, from 29% in 2010 to 17% in 2015; in the overweight BMI category, from 32% in 2010 to 19% in 2015; among girls in the thin BMI category, from 37% in 2010 to 17% in 2015; and among boys in the healthy weight BMI category, from 33% in 2010 to 22% in 2015.

Table 6.25 Prevalence of usually having soft drinks in the home among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Locality				
Urban (ref)	17.8 (2.0)	23.1 (2.4)	20.5 (1.8)	**30.7 (1.7) b**
Rural	17.0 (3.1)	18.4 (3.6)	17.7 (3.0)	**33.0 (3.9) b**
SES				
Low	21.4 (2.9)	**27.2 (3.2) a**	**24.4 (2.5) a**	**35.7 (3.4) b**
Middle	15.1 (1.8)	21.4 (2.9)	18.3 (1.9)	**34.9 (1.8) b**
High (ref)	16.0 (2.4)	16.2 (3.0)	16.1 (2.2)	**23.6 (2.1) b**
Cultural background				
English-speaking (ref)	16.7 (1.5)	21.3 (2.0)	18.9 (1.5)	**30.6 (1.6) b**
European	**53.2 (10.1) a**	**47.6 (15.0) a**	**50.5 (8.3) a**	40.8 (9.6)
Middle Eastern	**47.0 (7.8) a**	25.2 (9.3)	**36.8 (7.9) a**	46.1 (5.1)
Asian	11.7 (4.1)	19.8 (4.5)	16.4 (2.8)	**28.5 (2.7) b**
BMI category				
Thin	11.9 (3.5)	30.4 (6.1)	20.2 (3.7)	**33.6 (3.7) b**
Healthy weight (ref)	16.4 (1.8)	21.7 (2.2)	19.1 (1.7)	**31.2 (1.7) b**
Overweight	**22.0 (3.2) a**	20.0 (3.6)	21.0 (2.6)	**31.3 (2.7) b**
Obese	20.3 (6.0)	21.3 (5.4)	20.8 (4.3)	29.3 (5.0)
GIRLS				
Locality				
Urban (ref)	16.1 (2.3)	20.2 (3.6)	18.2 (2.6)	**28.8 (2.5) b**
Rural	15.0 (3.3)	13.8 (3.2)	14.4 (3.1)	**34.0 (6.6) b**
SES				
Low	16.3 (3.2)	**24.0 (4.4) a**	20.1 (3.5)	**37.6 (5.2) b**
Middle	16.5 (2.4)	18.6 (3.8)	17.6 (2.3)	**32.9 (3.0) b**
High (ref)	14.8 (3.6)	13.1 (4.1)	14.0 (3.3)	21.1 (2.5)
Cultural background				
English-speaking (ref)	15.1 (1.9)	18.4 (2.7)	16.8 (2.0)	**28.9 (2.4) b**
European	**42.7 (13.6) a**	**48.8 (18.8) a**	**44.9 (11.9) a**	35.6 (12.0)
Middle Eastern	**46.1 (10.1) a**	8.3 (8.1)	**30.4 (9.2) a**	48.8 (6.2)
Asian	8.9 (3.3)	18.5 (5.7)	14.6 (3.7)	**30.5 (6.6) b**
BMI category				
Thin	10.3 (5.0)	25.5 (9.0)	16.8 (4.8)	**37.2 (5.1) b**
Healthy weight (ref)	14.6 (2.4)	18.5 (2.8)	16.6 (2.3)	**29.3 (2.5) b**
Overweight	20.6 (3.0)	16.5 (4.5)	18.5 (3.0)	**32.2 (4.3) b**
Obese	20.0 (8.2)	17.3 (7.9)	18.7 (5.7)	22.1 (7.4)

	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	19.5 (2.9)	26.2 (2.9)	22.8 (2.2)	**32.4 (2.1) b**
Rural	18.7 (4.7)	22.4 (5.1)	20.6 (3.8)	**32.2 (2.6) b**
SES				
Low	26.7 (4.8)	**30.2 (3.8) a**	**28.5 (2.8) a**	33.9 (2.8)
Middle	13.9 (2.6)	24.1 (4.3)	18.9 (2.8)	**36.7 (1.9) b**
High (ref)	17.2 (3.2)	19.8 (3.7)	18.4 (2.8)	26.1 (3.1)
Cultural background				
English-speaking (ref)	18.1 (2.2)	24.1 (2.8)	21.0 (2.0)	**32.3 (1.8) b**
European	**85.5 (14.5) a**	46.7 (22.2)	**58.9 (13.8) a**	44.1 (13.0)
Middle Eastern	**47.8 (11.1) a**	36.3 (9.9)	**42.0 (8.3) a**	42.1 (7.0)
Asian	15.5 (9.1)	21.8 (6.2)	19.1 (4.9)	27.3 (2.6)
BMI category				
Thin	13.4 (5.5)	34.4 (7.9)	23.3 (5.2)	28.3 (5.7)
Healthy weight (ref)	18.3 (2.4)	24.9 (3.2)	21.6 (2.3)	**33.0 (2.2) b**
Overweight	23.2 (5.5)	23.5 (4.3)	23.4 (3.5)	30.5 (2.9)
Obese	20.8 (6.5)	25.0 (9.2)	23.0 (5.4)	33.9 (6.4)

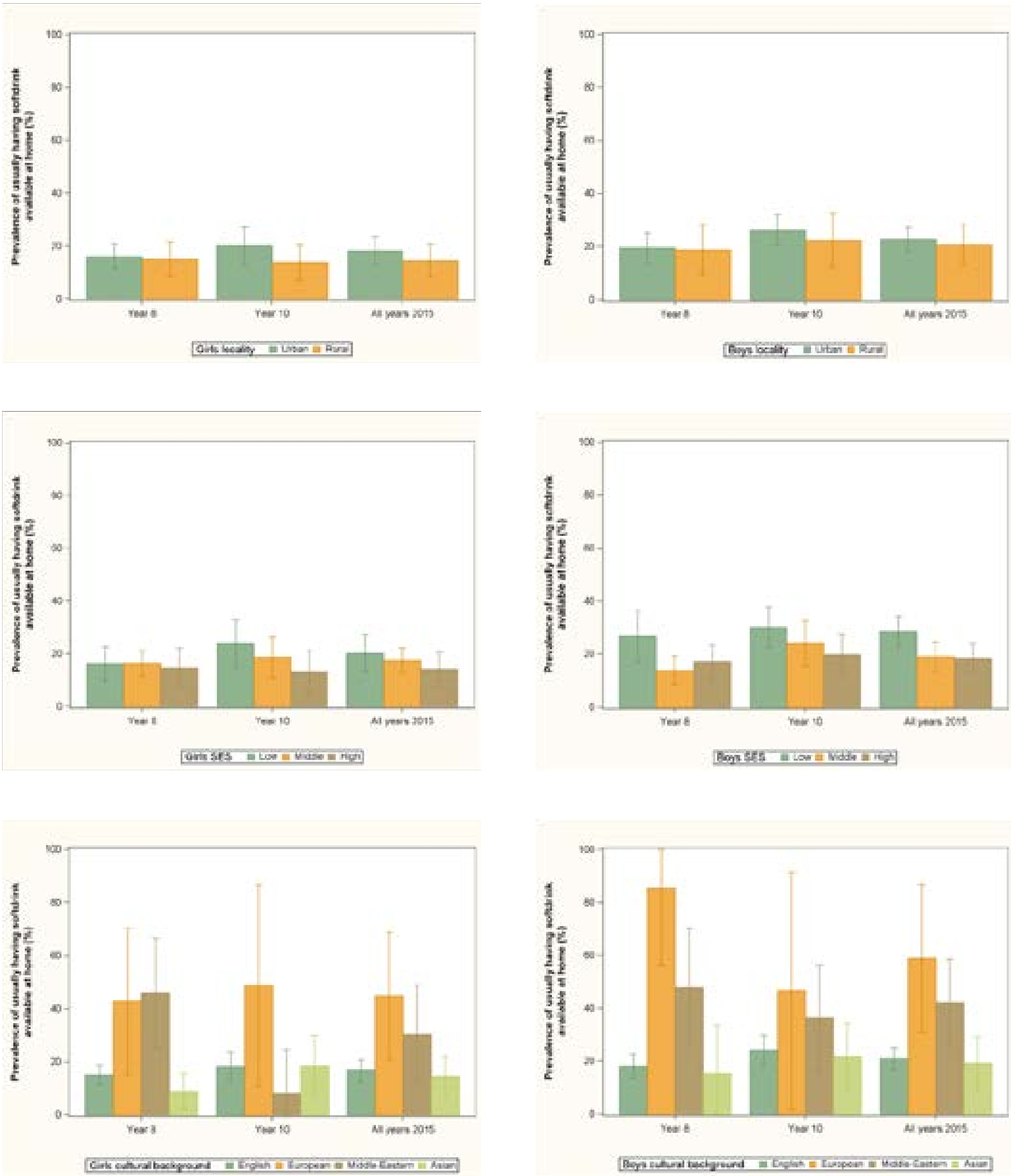
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

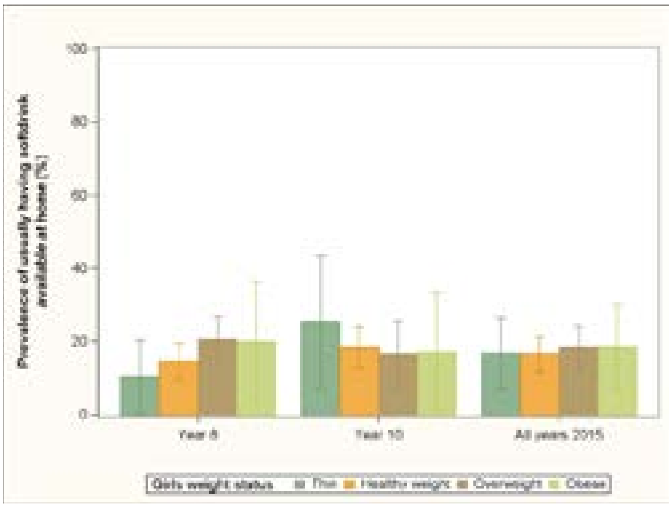
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

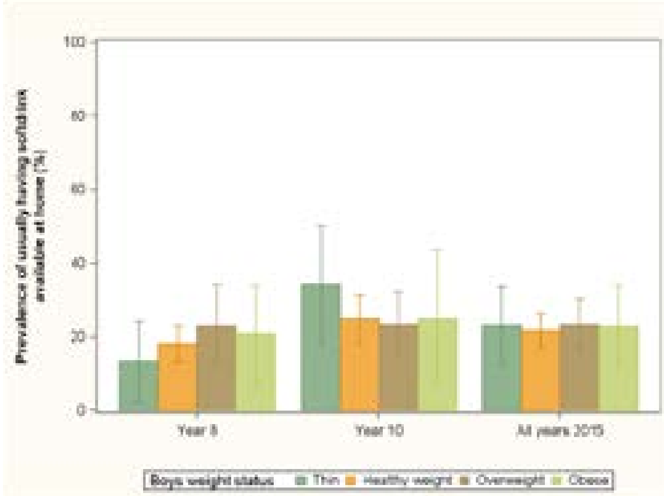
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 6.25 Prevalence of usually having soft drinks in the home among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%,95%CI)







UNRESTRICTED SNACKING AT HOME

Many factors shape an adolescent's diet quality, but the home food environment is a key influence with approximately two-thirds of adolescents' daily food intake being eaten in the home.[32] The evidence on parental control of food is equivocal; some studies suggest that allowing young people high control over their own food choices (i.e., allowing adolescents to get snacks without asking), may encourage unhealthy food consumption and have a deleterious effect on the quality of family meals.[33, 34] Others studies suggest that parental control is associated with increased consumption of healthy snacks.[35]

Snacks are largely comprised of salty foods, sweets and sweetened beverages, and adolescents often decide which foods are consumed for snacks.[33] Given snacking patterns track from childhood into adulthood, it is important to establish healthy eating patterns early in life.[36] The Australian Dietary Guideline recommends limiting intake of foods high in saturated fat such as many biscuits and cakes, pastries, pies, processed meats, commercial hamburgers, pizza, fried foods, potato chips, crisps and other savoury snacks. Further, discretionary foods should only be consumed sometimes and in small amounts.[12]

Hence, adolescent ad libitum, or 'unrestricted', snacking at home was included as a variable of interest for the first time in SPANS 2015 to determine the population prevalence of this eating behaviour among NSW adolescents. The SPANS question on unrestricted snacking by adolescents at home comes from a validated paediatric feeding questionnaire (original $\alpha = 0.69$, indicating acceptable internal consistency of the measure).[37,38]

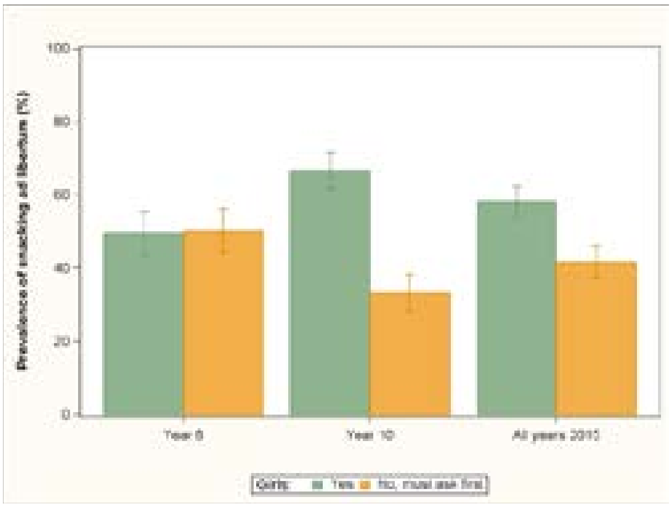
Table 6.26 and Figure 6.26 show the prevalence of unrestricted snacking on items such as lollies, ice cream, cakes, biscuits, and soft drinks in the home among adolescents by sex and year group in 2015. Overall, 61% of adolescents did not have to ask their parents for permission to eat snacks and could help themselves to snacks whenever they liked. A significantly higher proportion of boys had unrestricted snacking at home (64%), compared with girls (58%).

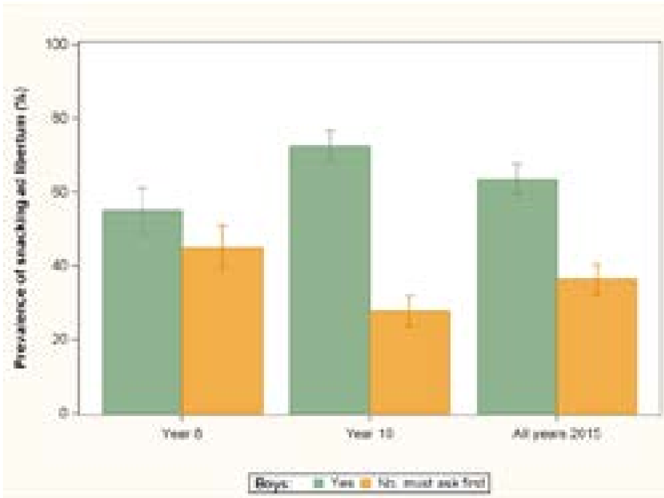
Table 6.26 Prevalence of unrestricted snacking in the home among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Yes, I can snack on junk food whenever I like	52.4 (2.3)	69.5 (1.8)	60.9 (1.7)
No, I have to ask parents first	47.6 (2.3)	30.5 (1.8)	39.1 (1.7)
GIRLS			
Yes, I can snack on junk food whenever I like	49.7 (2.9)	**66.7 (2.5) a**	**58.2 (2.2) a**
No, I have to ask parents first	50.3 (2.9)	33.3 (2.5)	41.8 (2.2)
BOYS			
Yes, I can snack on junk food whenever I like	55.1 (3.0)	72.3 (2.1)	63.6 (2.0)
No, I have to ask parents first	44.9 (3.0)	27.7 (2.1)	36.4 (2.0)

a *Indicates statistically significant difference at P < 0.05. Comparisons are between boys and girls within each year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 6.26 Prevalence of unrestricted snacking in the home among adolescents in secondary school by sex and year group 2015 (%, 95%CI)





SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately three in five (61%) adolescents in secondary school had access to unrestricted snacking in the home. Table 6.27 and Figure 6.27 show the prevalence of unrestricted snacking in the home among adolescents stratified by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, the prevalence of unrestricted snacking in the home was significantly lower among adolescents from rural areas (55%), compared with adolescents from urban areas (63%). The prevalence was significantly lower among girls from rural areas (50%), compared with adolescents from urban areas (61%).

Socio-economic status

2015: There were no significant differences in unrestricted snacking in the home between adolescents from different SES backgrounds.

Cultural background

2015: Overall, the prevalence of unrestricted snacking in the home was significantly higher among adolescents from Middle Eastern (74%) and Asian cultural backgrounds (74%), compared with adolescents from English-speaking backgrounds (59%). The prevalence was significantly higher among girls from Asian cultural backgrounds (73%), compared with girls from English-speaking backgrounds (56%), and among boys from Middle Eastern (74%) and Asian cultural backgrounds (74%), compared with boys from English-speaking backgrounds (62%).

Weight status

2015: There were no significant differences in unrestricted snacking in the home between adolescents in different BMI categories.

Table 6.27 Prevalence of unrestricted snacking among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Locality			
Urban (ref)	55.1 (2.5)	71.0 (2.0)	63.0 (1.9)
Rural	**45.3 (4.1) a**	65.3 (3.6)	**55.4 (2.8) a**
SES			
Low	53.2 (4.3)	66.4 (3.5)	59.9 (3.4)
Middle	51.7 (3.2)	70.1 (3.2)	60.9 (2.3)
High (ref)	52.4 (3.5)	72.3 (2.4)	62.0 (2.5)
Cultural background			
English-speaking (ref)	50.1 (2.2)	68.0 (2.1)	58.9 (1.8)
European	62.5 (11.7)	83.1 (9.1)	72.6 (9.1)
Middle Eastern	**73.0 (5.6) a**	74.7 (8.1)	**73.8 (5.6) a**
Asian	**67.1 (3.1) a**	78.4 (5.6)	**73.7 (3.5) a**
BMI category			
Thin	54.1 (6.6)	71.1 (6.3)	61.7 (4.6)
Healthy weight (ref)	52.1 (2.5)	72.0 (2.2)	62.2 (1.9)
Overweight	52.3 (3.7)	**63.0 (3.4) a**	57.5 (2.6)
Obese	53.9 (6.0)	60.6 (10.2)	57.3 (5.2)
GIRLS			
Locality			
Urban (ref)	52.8 (3.4)	69.3 (2.7)	61.1 (2.5)
Rural	40.8 (5.2)	**59.0 (4.3) a**	**49.9 (3.1) a**
SES			
Low	48.7 (4.6)	61.9 (3.8)	55.3 (3.6)
Middle	49.0 (4.4)	67.3 (4.9)	58.4 (3.2)
High (ref)	51.1 (5.7)	70.9 (3.8)	61.1 (4.0)
Cultural background			
English-speaking (ref)	46.2 (3.1)	65.7 (2.9)	55.9 (2.5)
European	50.4 (12.9)	61.7 (17.1)	54.4 (10.5)
Middle Eastern	**73.0 (8.6) a**	74.4 (14.7)	73.6 (10.0)
Asian	**71.2 (6.3) a**	74.1 (8.1)	**72.9 (5.6) a**
BMI category			
Thin	58.7 (8.8)	64.0 (9.7)	60.9 (6.5)
Healthy weight (ref)	50.1 (3.8)	69.9 (3.3)	60.3 (3.0)
Overweight	46.1 (5.3)	62.5 (5.1)	54.4 (3.7)
Obese	46.5 (8.9)	43.7 (15.1)	45.2 (7.7)

	2015		
	Year 8	**Year 10**	**All years**
BOYS			
Locality			
Urban (ref)	57.4 (3.6)	72.9 (2.2)	65.0 (2.3)
Rural	49.4 (4.1)	70.9 (4.7)	60.2 (3.4)
SES			
Low	57.8 (6.0)	70.7 (4.9)	64.5 (4.3)
Middle	53.9 (3.5)	72.8 (3.3)	63.2 (2.7)
High (ref)	53.6 (3.6)	73.9 (2.0)	63.1 (2.2)
Cultural background			
English-speaking (ref)	53.8 (2.8)	70.2 (2.4)	61.8 (2.1)
European	100.0 (0.0)	100.0 (0.0)	100.0 (0.0)
Middle Eastern	**73.1 (4.1) a**	75.0 (8.5)	**74.0 (4.6) a**
Asian	61.4 (7.3)	**84.8 (4.6) a**	**74.9 (3.0) a**
BMI category			
Thin	49.5 (10.1)	76.6 (6.2)	62.4 (6.2)
Healthy weight (ref)	54.0 (3.0)	74.2 (2.6)	64.1 (2.2)
Overweight	57.7 (5.6)	63.5 (5.0)	60.4 (4.3)
Obese	62.4 (8.3)	76.0 (9.5)	69.6 (6.0)

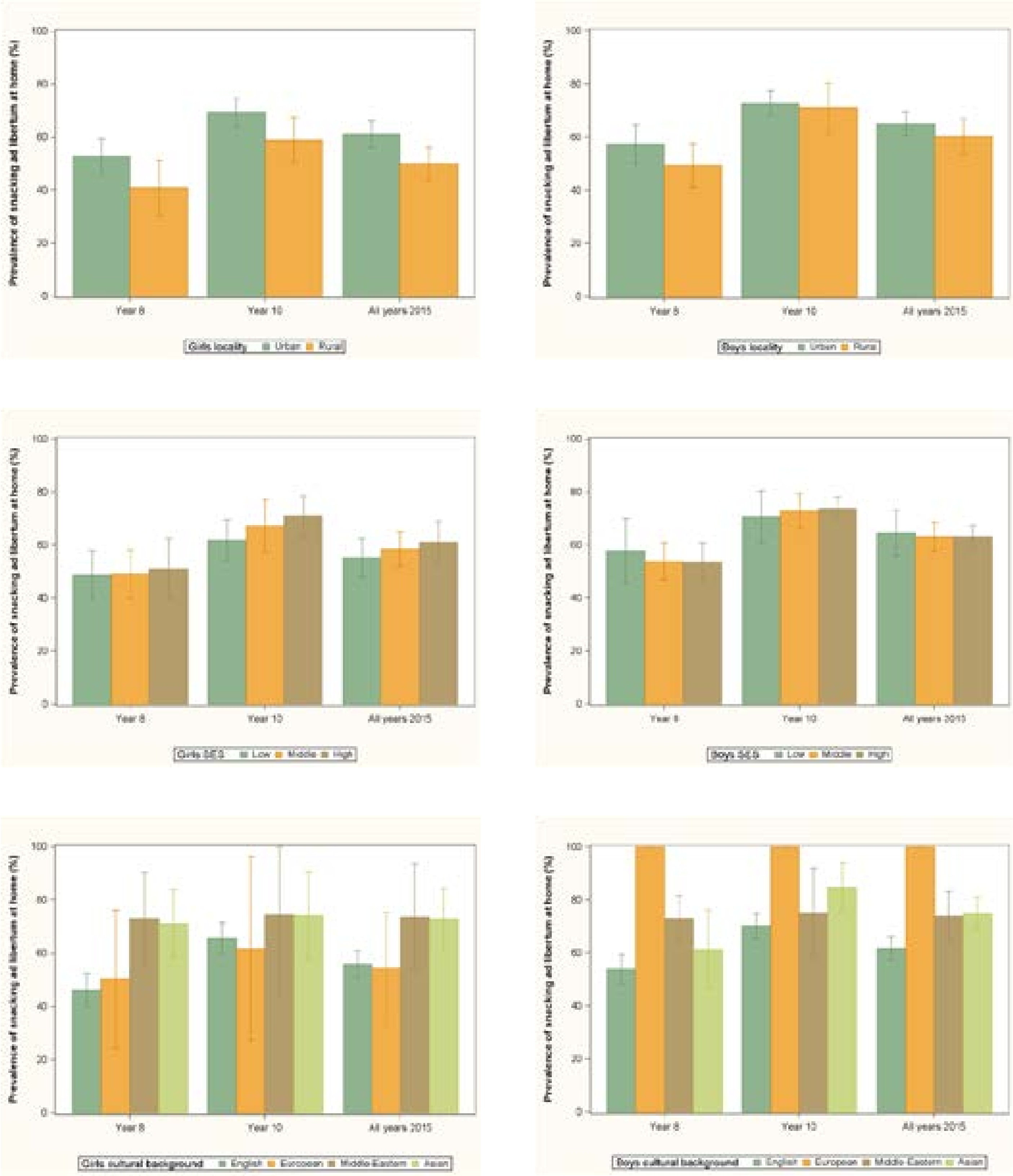
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

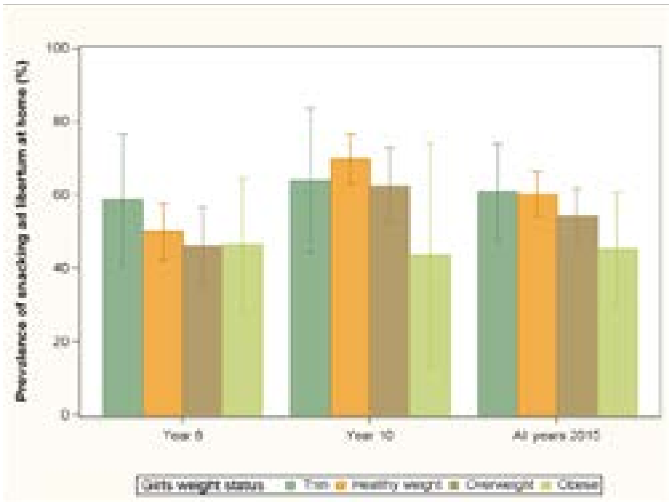
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

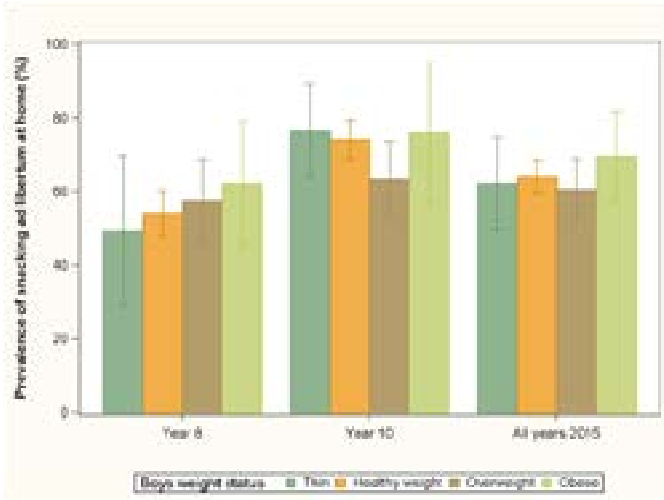
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 6.27 Prevalence of unrestricted snacking among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%,95%CI)







FAST FOOD CONSUMPTION

Fast food is a general term used for a limited menu of foods that lend themselves to production-line techniques where suppliers tend to specialise in products such as hamburgers, pizzas, chicken or sandwiches.[39] In the last 20 years, the fast food industry has grown exponentially providing a diverse range of processed food products that have had considerable influence on the eating habits of large segments of the population.[40]

Fast foods are typically high in kilojoules, fat, saturated fat, sugar and salt, and regular consumption is associated with higher caloric intake and poorer diet quality, characterised by a diet higher in fat, carbohydrate and sugar.[41] Further, fast food is cheap and readily and widely available with an estimated one in five adolescents worldwide consuming fast food frequently.[42] Indeed, in terms of foods eaten away from home, fast food represents the largest contributor to energy intake among children and adolescents age 12-18 years.[43]

The Australian Dietary Guideline 3 is to limit intake of foods high in saturated fat such as many biscuits and cakes, pastries, pies, processed meats, commercial hamburgers, pizza, fried foods, potato chips, crisps and other savoury snacks. Further, 'discretionary' foods[2] should only be consumed sometimes and in small amounts.[12] SPANS asked about how frequently adolescents usually ate takeaway meals or snacks from places like McDonald's, Hungry Jack's, Pizza Hut, KFC, Red Rooster or local takeaway food places. No information on the type of or quantity of fast food purchased was collected.

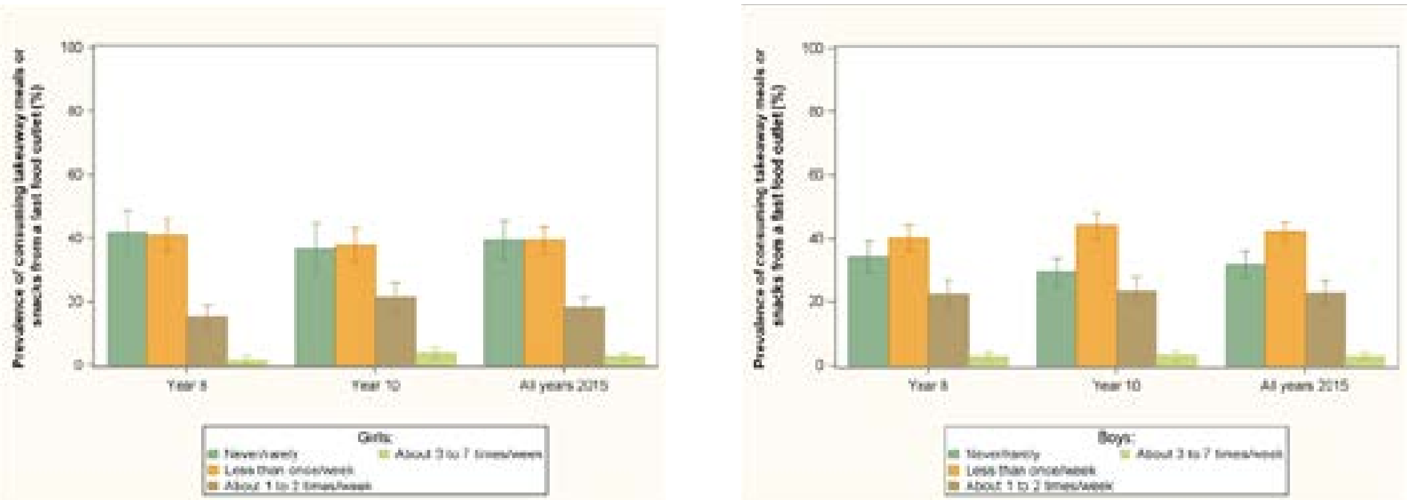
Table 6.28 and Figure 6.28 show the prevalence of eating takeaway meals (or snacks) from fast food outlets and local takeaway food venues among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 36% of adolescents 'never or rarely' ate takeaway meals (or snacks) from fast food outlets and local takeaway food venues and 24% of adolescents ate meal or snacks from takeaway outlets one or more times a week.

Table 6.28 Prevalence of eating takeaway meals or snacks from a fast food outlet among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Never/rarely	38.1 (2.4)	33.1 (2.4)	35.6 (2.1)	27.2 (1.2)
Less than once/week	40.7 (1.8)	40.9 (1.6)	40.8 (1.3)	43.7 (1.0)
About 1 to 2 times/week	19.0 (1.7)	22.5 (1.8)	20.8 (1.4)	25.7 (1.1)
About 3 to 7 times/week	2.2 (0.5)	3.4 (0.6)	2.8 (0.4)	3.4 (0.4)
GIRLS				
Never/rarely	41.9 (3.4)	36.9 (3.8)	39.4 (3.0)	30.1 (1.9)
Less than once/week	41.1 (2.5)	37.8 (2.7)	39.4 (2.1)	43.9 (1.4)
About 1 to 2 times/week	15.3 (1.9)	21.5 (2.3)	18.4 (1.5)	23.4 (1.5)
About 3 to 7 times/week	1.7 (0.7)	3.8 (0.8)	2.8 (0.5)	2.6 (0.5)
BOYS				
Never/rarely	34.3 (2.5)	29.4 (2.2)	31.9 (2.0)	24.5 (1.3)
Less than once/week	40.3 (2.0)	44.1 (2.1)	42.2 (1.4)	43.6 (1.6)
About 1 to 2 times/week	22.7 (2.2)	23.6 (2.2)	23.1 (1.8)	27.8 (1.6)
About 3 to 7 times/week	2.7 (0.7)	3.0 (0.8)	2.8 (0.6)	4.2 (0.7)

Note: No significance testing was conducted.

Figure 6.28 Prevalence of eating takeaway meals or snacks from a fast food outlet among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately one in four (24%) adolescents in secondary school ate takeaway meals or snacks from a fast food outlet one or more times a week. Table 6.29 and Figure 6.29 show the prevalence of 'usually' eating takeaway meals or snacks from a fast food outlet at least once a week among adolescents stratified by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of eating takeaway foods one or more times a week from a fast food outlet was significantly lower among adolescents living in rural areas (13%) compared with adolescents in urban areas (27%). The prevalence was significantly lower among girls from rural areas (11%) compared with girls from urban areas (25%); and among boys from rural areas (16%) compared with boys from urban areas (30%).

Change between 2010-2015: The prevalence of eating takeaway foods from a fast food outlet significantly declined among adolescents in rural areas, from 27% in 2010 to 13% in 2015. The prevalence decreased among girls in rural areas, from 26% in 2010 to 11% in 2015; and boys from rural areas, from 29% in 2010 to 16% in 2015.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of eating takeaway foods from fast food outlets one or more times a week between adolescents from different SES backgrounds.

Change between 2010-2015: Overall, the prevalence of eating takeaway foods from fast food outlets one or more times a week significantly decreased among adolescents from low SES tertile, from 35% in 2010 to 23% in 2015. The prevalence significantly decreased among girls from low SES backgrounds, from 32% in 2010 to 19% in 2015; and among boys from low SES backgrounds, from 38% in 2010 to 27% in 2015.

Cultural background

2015: Overall, the prevalence of eating takeaway foods from fast food outlets one or more times a week was significantly higher among adolescents from Asian cultural backgrounds (34%), compared with adolescents from English-speaking backgrounds (22%). The prevalence was significantly higher among boys from Asian cultural backgrounds (37%), compared with boys from English-speaking (25%) backgrounds.

Change between 2010-2015: Overall, the prevalence of eating takeaway foods from fast food outlets one or more times a week significantly decreased among adolescents from English-speaking backgrounds, from 28% in 2010 to 22% in 2015. The prevalence significantly decreased among boys from English-speaking backgrounds, from 31% in 2010 to 25% in 2015; and boys from Middle Eastern cultural backgrounds, from 50% in 2010 to 27% in 2015.

Weight status

2015: There were no significant differences in prevalence of eating takeaway foods from fast food outlets one or more times a week between adolescents from different BMI categories.

Change between 2010-2015: Overall, the prevalence of eating takeaway foods from fast food outlets one or more times a week significantly decreased among adolescents in the healthy BMI category, from 29% in 2010 to 24% in 2015; and in the overweight BMI category, from 28% in 2010 to 21% in 2015. The prevalence significantly decreased among girls in the overweight BMI category, from 27% in 2010 to 17% in 2015; and among boys in the healthy BMI category, from 32% in 2010 to 26% in 2015.

Table 6.29 Prevalence of eating takeaway meals or snacks from a fast food outlet at least once a week among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Locality				
Urban (ref)	25.1 (1.9)	29.6 (2.2)	27.4 (1.6)	29.6 (1.4)
Rural	**10.9 (1.5) a**	**16.0 (2.9) a**	**13.4 (1.5) a**	**27.3 (3.6) b**
SES				
Low	23.2 (3.4)	22.8 (2.7)	23.0 (2.6)	**35.0 (2.7) b**
Middle	19.4 (1.9)	29.1 (3.4)	24.3 (2.3)	27.0 (1.8)
High (ref)	21.0 (2.8)	26.3 (3.7)	23.6 (2.5)	26.5 (1.6)
Cultural background				
English-speaking (ref)	19.7 (1.7)	25.1 (2.2)	22.3 (1.6)	**27.8 (1.3) b**
European	14.2 (10.2)	16.9 (11.6)	15.6 (8.5)	24.3 (6.8)
Middle Eastern	30.0 (8.7)	21.4 (8.7)	26.0 (5.6)	38.2 (5.0)
Asian	**35.9 (5.8) a**	32.1 (6.0)	**33.6 (4.1) a**	42.4 (3.9)
BMI category				
Thin	23.2 (4.4)	30.8 (5.3)	26.6 (3.3)	35.4 (3.3)
Healthy weight (ref)	21.5 (2.1)	26.1 (2.4)	23.9 (1.8)	**29.2 (1.4) b**
Overweight	19.0 (2.4)	23.1 (3.5)	21.0 (2.4)	**27.8 (2.5) b**
Obese	23.3 (5.3)	26.1 (8.1)	24.7 (4.8)	23.2 (3.5)
GIRLS				
Locality				
Urban (ref)	21.4 (2.3)	27.9 (2.9)	24.7 (1.9)	26.1 (1.8)
Rural	**4.4 (1.9) a**	17.5 (4.5)	**10.9 (2.8) a**	**25.7 (3.9) b**
SES				
Low	17.8 (4.0)	20.4 (3.1)	19.1 (2.8)	**31.8 (3.4) b**
Middle	17.1 (3.3)	30.0 (4.0)	23.8 (2.8)	23.3 (2.1)
High (ref)	16.0 (2.6)	26.0 (5.3)	21.0 (2.9)	24.2 (2.3)
Cultural background				
English-speaking (ref)	16.0 (2.2)	23.6 (2.9)	19.8 (2.0)	24.8 (1.6)
European	na	26.5 (23.2)	9.5 (9.8)	16.4 (8.0)
Middle Eastern	32.2 (10.2)	15.5 (11.7)	25.3 (6.6)	30.4 (4.8)
Asian	24.8 (5.7)	35.3 (9.1)	31.2 (6.3)	42.4 (8.1)
BMI category				
Thin	24.7 (7.1)	22.3 (7.4)	23.6 (4.9)	30.3 (5.1)
Healthy weight (ref)	16.8 (2.2)	26.9 (3.2)	22.1 (2.0)	25.8 (1.7)
Overweight	12.4 (3.3)	22.3 (5.0)	17.4 (3.1)	**26.9 (3.7) b**
Obese	23.5 (7.6)	19.5 (12.6)	21.7 (6.7)	18.5 (5.5)

	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	28.8 (2.7)	31.5 (2.6)	30.1 (2.2)	32.9 (1.9)
Rural	**16.6 (2.7) a**	**14.7 (2.9) a**	**15.6 (1.5) a**	**28.8 (4.9) b**
SES				
Low	28.6 (4.7)	25.0 (3.5)	26.7 (3.3)	**38.0 (3.8) b**
Middle	21.4 (2.1)	28.3 (4.6)	24.8 (2.5)	30.3 (2.5)
High (ref)	26.0 (4.2)	26.7 (3.5)	26.3 (3.3)	28.8 (1.9)
Cultural background				
English-speaking (ref)	23.1 (2.1)	26.6 (2.6)	24.8 (1.9)	**30.6 (1.8) b**
European	57.7 (25.3)	10.9 (11.1)	23.5 (14.4)	29.4 (9.7)
Middle Eastern	27.9 (9.2)	25.2 (11.4)	26.5 (6.9)	**49.9 (5.8) b**
Asian	**51.4 (11.4) a**	27.0 (5.6)	**37.3 (6.2) a**	42.5 (3.7)
BMI category				
Thin	21.7 (6.2)	**38.1 (6.8) a**	29.4 (5.1)	42.7 (6.3)
Healthy weight (ref)	26.1 (3.1)	25.3 (2.8)	25.7 (2.3)	**32.4 (2.1) b**
Overweight	24.8 (3.5)	23.8 (4.6)	24.4 (3.3)	28.5 (3.2)
Obese	23.0 (7.0)	32.1 (10.5)	27.7 (7.0)	26.0 (4.9)

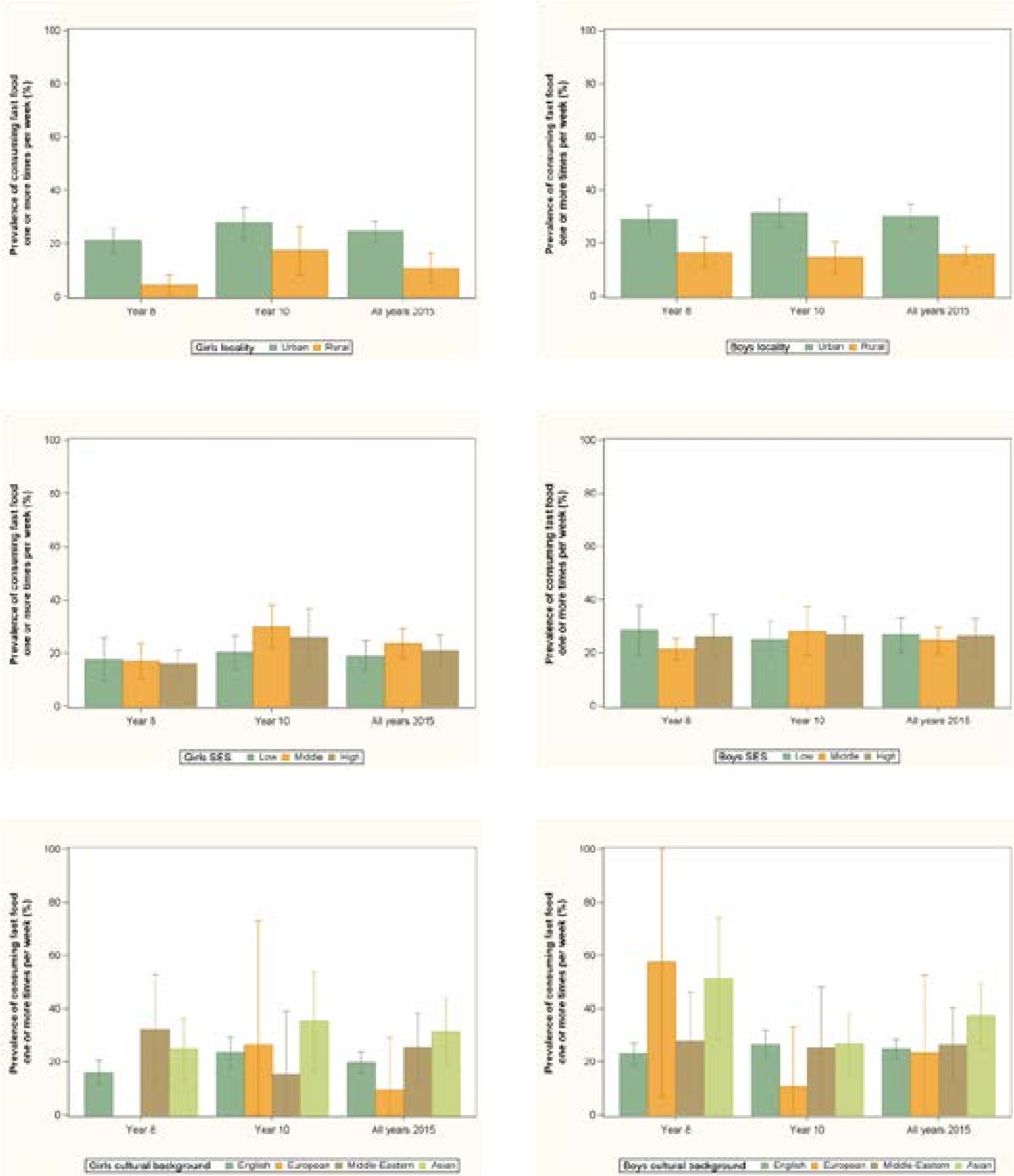
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

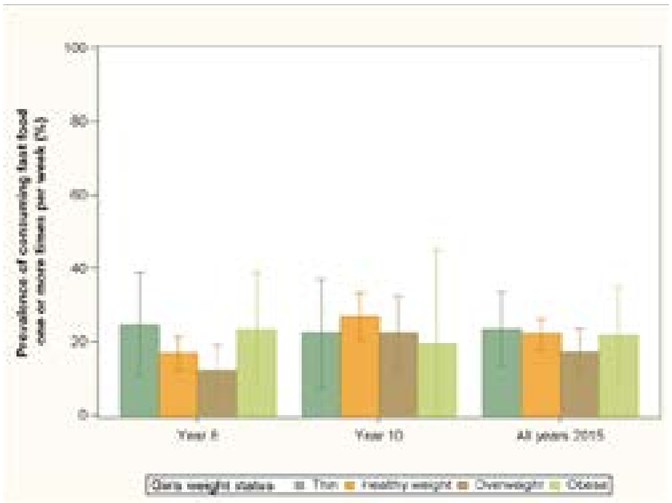
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

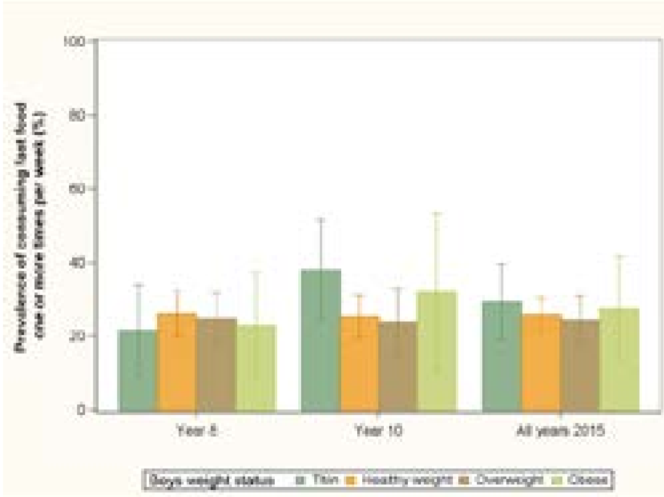
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 6.29 Prevalence of eating takeaway meals or snacks from a fast food outlet at least once a week among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)







SCHOOL FOOD ENVIRONMENT

School canteens are a major source of takeaway foods in NSW, with about 2,700 schools providing a canteen service. For adolescents who regularly purchases lunch and snacks from the school canteen, this contributes to a substantial portion of their daily food intake.[44] Healthy school canteens provide an opportunity to encourage healthy eating, although energy-dense, nutrient-poor food choices are still available in many NSW canteens.[45, 46]

Concern about the increase in child obesity rates has driven efforts to assist schools to improve the school food environment. Provision of unhealthy food in the school canteen can potentially undermine curriculum and parental efforts to improve young people's nutrition habits and create the impression that processed foods are everyday rather than occasional foods.[47] In NSW, the *Fresh Tastes @ School* NSW Healthy School Canteen Strategy supports all government schools to provide a healthy, nutritious canteen menu. Implementation of the strategy is mandatory for government school canteens through the Nutrition in Schools Policy.[48]

The following section reports on the school food environment, specifically on how frequently adolescents in secondary school purchase lunch from the school canteen, and what types of drinks were purchased at the school canteen and the school vending machine. Adolescents in secondary school who reported that their school did not have a canteen (<1%) or vending machine (65%) were excluded from the analyses.

BUYING LUNCH FROM THE SCHOOL CANTEEN

While there have been substantial efforts to support improvements in school canteens and school food environments there is also evidence that schools have difficulty implementing healthy school canteen policies.[49] Logistically, it is not possible to monitor individual lunch items that adolescents purchase from the school canteen; rather SPANS assesses the frequency with which lunch was usually purchased from the school canteen. The question does not ask about the quality or quantity of food purchased for lunch from school canteens.

Table 6.30 and Figure 6.30 show the prevalence of purchasing lunch from the school canteen among adolescents by sex and year group in 2015 and in 2010 for comparison.

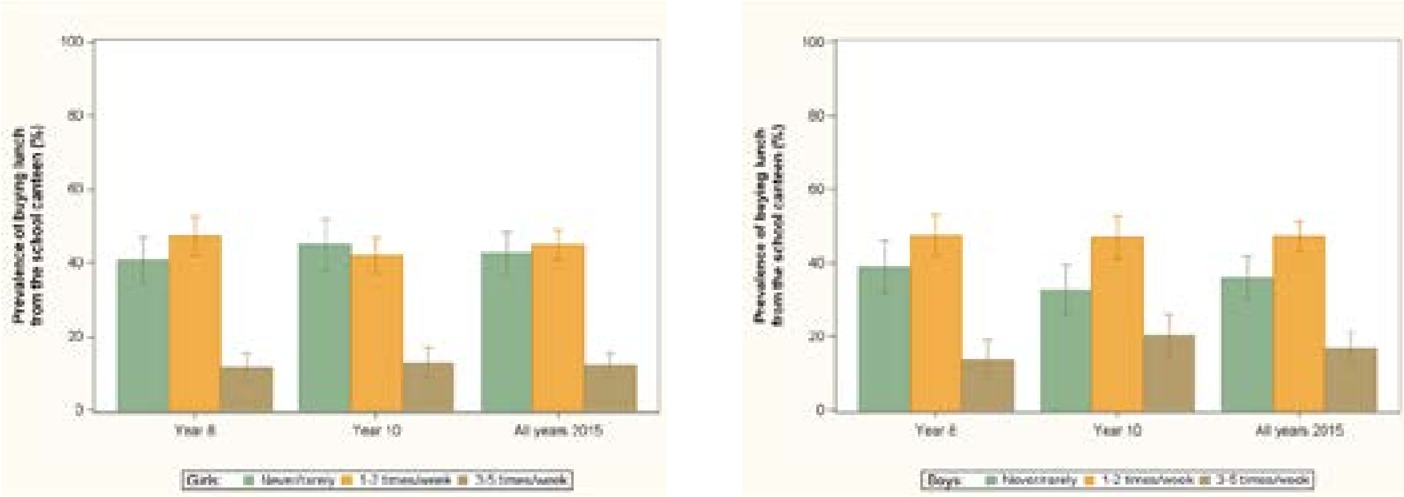
Overall, approximately two in five adolescents (39%) never or rarely purchased lunch from the school canteen and approximately one in seven (15%) purchased lunch from the school canteen 3-5 times a week. The frequency of adolescents purchasing lunch from the school canteen was similar in 2010 and 2015.

Table 6.30 Prevalence of buying lunch from the school canteen among adolescents in secondary school by sex and year group in 2015 and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Never/rarely	39.8 (2.7)	38.8 (3.0)	39.3 (2.5)	38.8 (1.8)
1-2 times/week	47.4 (1.9)	44.6 (2.0)	46.0 (1.5)	46.2 (1.4)
3-5 times/week	12.7 (1.8)	16.6 (2.1)	14.6 (1.8)	15.0 (1.4)
GIRLS				
Never/rarely	40.7 (3.2)	44.9 (3.5)	42.8 (2.8)	43.3 (2.1)
1-2 times/week	47.4 (2.6)	42.2 (2.4)	44.8 (2.0)	44.4 (1.7)
3-5 times/week	11.8 (1.9)	12.9 (2.1)	12.4 (1.7)	12.3 (1.5)
BOYS				
Never/rarely	39.0 (3.6)	32.8 (3.4)	35.9 (2.9)	34.5 (2.1)
1-2 times/week	47.4 (2.8)	47.0 (2.9)	47.2 (2.1)	47.9 (2.0)
3-5 times/week	13.6 (2.7)	20.2 (2.8)	16.9 (2.2)	17.5 (1.9)

Note: No significance testing was conducted.

Figure 6.30 Prevalence of buying lunch from the school canteen among adolescents in secondary school, by sex and year group in 2015 (%, 95%CI)



DRINKS PURCHASED AT SCHOOL

Almost all (99%) adolescents in secondary schools participating in SPANS reported that their school had a canteen (which potentially sells drinks). Objective 1.3 of the NSW Nutrition in Schools Policy states *All sugar-sweetened drinks that exceed the nutritional criteria for 'occasional' foods outlined in the Fresh Tastes @ School Canteen Menu Planning Guide, are not permitted for sale in school canteens and school vending machines at all times.*[48] SPANS asked if adolescents purchased drinks at school and, if so, the drink they purchased most often from the school canteen or vending machine. The question did not ask about quantity of drink purchased.

Table 6.31 and Figure 6.31 show the type of drink adolescents most frequently purchased from the school canteen by sex and year group in 2015, and in 2010 for comparison. Adolescents who reported that their school did not have a canteen (<1%) were excluded from the analyses.

Overall, 62% of adolescents purchased drinks from the school canteen. The most prevalent drinks purchased were plain or flavoured milk (18%), plain water (14%) and fruit juice (10%). More boys than girls appeared to purchase plain or flavoured milk (21% for boys and 16% for girls) and soft drinks (12% for boys and 6% for girls). More girls than boys appeared to purchase fruit juice (13% for girls and 8% for boys) and plain water (19% for girls and 9% for boys).

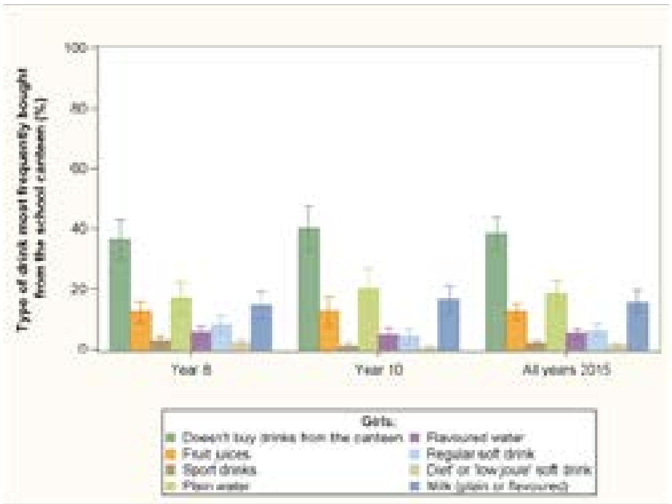
Between 2010 and 2015, the proportion of adolescents purchasing sugar-sweetened beverages including fruit juice, soft drink, and sports drinks from the school canteen appeared to have decreased slightly, while purchases of beverages such as plain water and milk from the school canteen appear to have increased slightly.

Table 6.31 Type of drink most frequently bought from the school canteen among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Doesn't buy drinks from the canteen	38.4 (2.5)	37.6 (2.8)	37.9 (2.2)	33.6 (1.8)
Fruit juices	9.7 (1.4)	10.4 (1.8)	10.1 (1.2)	13.5 (1.2)
Sport drinks	4.4 (0.8)	3.1 (0.8)	3.7 (0.7)	6.0 (0.9)
Plain water	11.5 (1.8)	16.3 (2.4)	13.9 (1.7)	11.9 (1.2)
Flavoured water	4.6 (0.8)	4.9 (0.9)	4.8 (0.6)	na
Regular soft drink	10.3 (1.5)	8.2 (1.3)	9.3 (1.2)	14.6 (1.7)
'Diet' or 'low joule' soft drink	2.7 (0.5)	1.4 (0.5)	2.0 (0.4)	5.7 (0.7)
Milk (plain or flavoured)	18.4 (2.1)	18.1 (2.0)	18.3 (1.8)	14.8 (1.5)
GIRLS				
Doesn't buy drinks from the canteen	36.7 (3.3)	40.2 (3.7)	38.5 (2.7)	35.9 (2.4)
Fruit juices	12.5 (1.7)	12.6 (2.4)	12.5 (1.4)	17.3 (1.8)
Sport drinks	2.9 (0.8)	1.1 (0.5)	2.0 (0.4)	4.1 (1.0)
Plain water	17.0 (2.7)	19.9 (3.4)	18.5 (2.2)	16.6 (1.8)
Flavoured water	5.8 (1.1)	4.7 (1.3)	5.2 (0.8)	na
Regular soft drink	8.3 (1.5)	4.3 (1.3)	6.3 (1.2)	8.9 (1.5)
'Diet' or 'low joule' soft drink	2.2 (0.6)	0.6 (0.3)	1.4 (0.3)	5.0 (0.9)
Milk (plain or flavoured)	14.7 (2.2)	16.6 (2.3)	15.6 (1.9)	12.2 (1.7)
BOYS				
Doesn't buy drinks from the canteen	39.9 (3.5)	34.9 (3.1)	37.4 (2.7)	31.4 (2.1)
Fruit juices	7.0 (1.6)	8.3 (2.1)	7.7 (1.4)	9.9 (1.1)
Sport drinks	5.8 (1.4)	5.1 (1.3)	5.4 (1.1)	7.9 (1.3)
Plain water	6.1 (1.8)	12.6 (2.5)	9.4 (1.9)	7.5 (1.2)
Flavoured water	3.4 (1.2)	5.2 (1.2)	4.3 (0.8)	na
Regular soft drink	12.4 (2.0)	12.2 (2.1)	12.3 (1.7)	19.9 (2.3)
'Diet' or 'low joule' soft drink	3.2 (0.9)	2.1 (0.8)	2.7 (0.7)	6.3 (0.8)
Milk (plain or flavoured)	22.1 (2.8)	19.6 (3.0)	20.9 (2.4)	17.2 (2.1)

Note: No significance testing was conducted.
na *Flavoured water consumption was not asked in SPANS 2010*

Figure 6.31 Type of drink most frequently bought from the school canteen among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



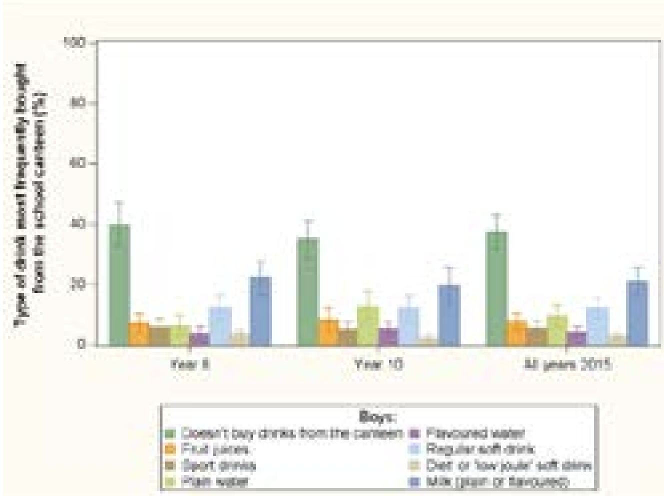


Table 6.32 and Figure 6.32 show the types of drink that adolescents in secondary school reported they most frequently bought from the school vending machine by sex and year group in 2015, and in 2010 for comparison. Adolescents who reported that their school did not have a vending machine (65%) were excluded from the analyses.

Overall, 33% of adolescents reported purchasing drinks from the school vending machine. The most prevalent drinks purchased were soft drinks, plain water and sports drinks. Drink purchases from the school vending machine appear to be broadly consistent across boys and girls, and year groups. Purchases of flavoured water and plain water from school vending machines appeared to decrease between 2010 and 2015.

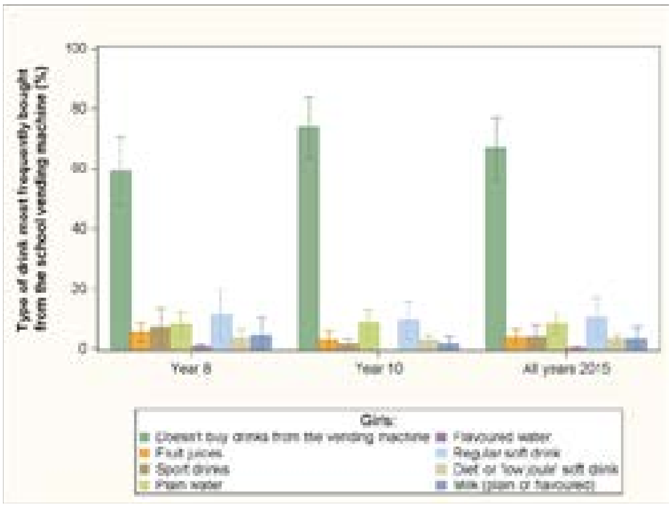
Table 6.32 Type of drink most frequently bought from the school vending machines among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

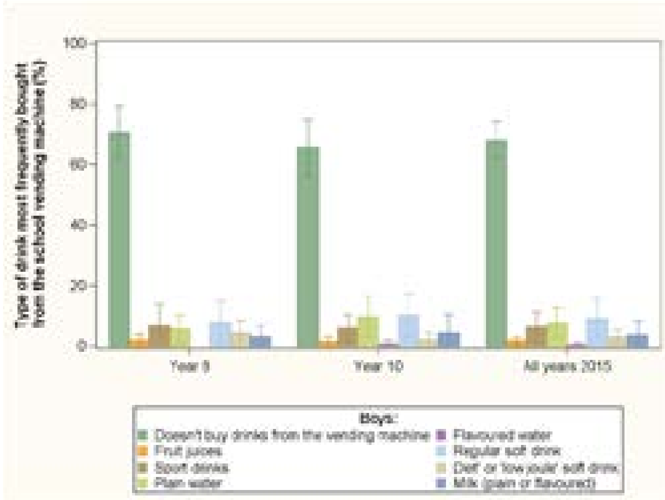
	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Doesn't buy drinks from the vending machine	64.4 (3.9)	70.1 (4.0)	67.3 (3.4)	54.6 (3.6)
Fruit juices	3.9 (1.2)	2.2 (1.0)	3.0 (0.9)	5.0 (2.0)
Sport drinks	7.0 (2.2)	3.5 (1.2)	5.2 (1.4)	5.1 (1.0)
Plain water	6.9 (1.7)	9.1 (2.1)	8.0 (1.5)	11.2 (3.0)
Flavoured water	0.4 (0.2)	0.3 (0.3)	0.3 (0.2)	16.3 (2.9)
Regular soft drink	9.7 (3.0)	9.8 (2.6)	9.8 (2.6)	6.5 (1.4)
‘Diet' or 'low joule' soft drink	3.9 (1.2)	2.3 (0.8)	3.1 (0.7)	1.3 (0.6)
Milk (plain or flavoured)	3.9 (2.3)	2.8 (2.1)	3.3 (2.1)	na
GIRLS				
Doesn't buy drinks from the vending machine	59.3 (5.6)	73.7 (5.0)	66.7 (5.2)	57.2 (5.8)
Fruit juices	5.5 (1.6)	2.8 (1.6)	4.1 (1.2)	7.4 (4.0)
Sport drinks	7.2 (3.2)	1.5 (0.8)	4.3 (1.8)	2.9 (1.0)
Plain water	8.0 (2.2)	8.5 (2.3)	8.2 (1.6)	18.3 (4.9)
Flavoured water	0.7 (0.4)	na	0.3 (0.2)	9.1 (2.7)
Regular soft drink	11.2 (4.1)	9.4 (3.2)	10.3 (3.3)	5.0 (1.4)
‘Diet' or 'low joule' soft drink	3.6 (1.4)	2.5 (1.1)	3.0 (0.9)	0.1 (0.1)
Milk (plain or flavoured)	4.6 (2.9)	1.6 (1.3)	3.1 (2.1)	na
BOYS				
Doesn't buy drinks from the vending machine	70.6 (4.4)	65.6 (4.5)	68.1 (2.9)	52.6 (4.7)
Fruit juices	1.9 (1.0)	1.4 (0.8)	1.7 (0.6)	3.1 (0.9)
Sport drinks	6.8 (3.5)	5.9 (2.3)	6.3 (2.5)	6.8 (1.3)
Plain water	5.5 (2.4)	9.8 (3.4)	7.7 (2.5)	5.8 (2.0)
Flavoured water	na	0.7 (0.7)	0.4 (0.3)	21.9 (3.8)
Regular soft drink	7.9 (3.5)	10.3 (3.6)	9.1 (3.2)	7.6 (1.8)
‘Diet' or 'low joule' soft drink	4.3 (2.1)	2.0 (1.1)	3.1 (1.1)	2.2 (1.0)
Milk (plain or flavoured)	3.0 (1.8)	4.2 (3.1)	3.6 (2.4)	na

Note: No significance testing was conducted.

na *Flavoured water consumption was not asked in SPANS 2010.*

Figure 6.32 Type of drink most frequently bought from the school vending machine among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





SUMMARY OF THE DIETARY HABITS OF ADOLESCENTS IN SECONDARY SCHOOL

The table below summarises the prevalence in 2015 (and where possible in 2010) for each indicator of food for all years of children in secondary school.

Dietary indicator	Government Policies and Programs	SPANS cut point	Prevalence (%) 2010	Prevalence (%) 2015	Significant subgroup findings for 2015* & change between 2010-2015
HOME-BASED DIETARY HABITS					
Breakfast	Skipping breakfast is associated with reduced intake of calcium and dietary fibre; and children who do not eat breakfast are at increased risk of overweight and obesity, with the evidence being stronger for adolescents[12]	Daily	65.8%	59.7% [sig]	**2015:** Overall, the proportion of adolescents eating daily breakfast was significantly lower in adolescents from low and middle SES backgrounds and in the overweight BMI category **Change 2010-15:** Overall, the proportion of adolescents eating breakfast daily significantly decreased between 2010 and 2015. Within subgroups, eating breakfast daily significantly decreased among adolescents from urban areas, middle SES backgrounds, English-speaking backgrounds and in the healthy weight BMI category
Regularly eating dinner in front of the TV	No specific recommendations	≥5/week	21.2%	23.3%	**2015:** Overall, the proportion of adolescents eating dinner in front of the TV ≥5/week was significantly higher among adolescents from low and middle SES backgrounds **Change 2010-15:** Overall, and within subgroups, there were no significant changes in the proportion of adolescents eating dinner in front of the TV ≥5 times/week between 2010 and 2015
Soft drink availability in the home	Limit intake of foods high in saturated fat such as many biscuit and cake, pastries, pies, processed meats, commercial hamburgers, pizza, fried foods, potato chips, crisps and other savoury snacks. Discretionary foods should only be consumed sometimes and in small amounts[12]	'Usually'	31.2%	19.7%	**2015:** Overall, the proportion of adolescents with soft drinks usually available in the home was significantly higher among adolescents from low SES backgrounds and from European and Middle Eastern cultural backgrounds **Change between 2010-15:** Overall, there were no significant changes in soft drinks usually being available in the home between 2010 and 2015. Within subgroups, soft drinks usually being available in the home significantly decreased among adolescents from urban and rural areas, each SES tertile,; English speaking and Asian cultural backgrounds, and in the thin, healthy weight and overweight BMI categories
Family offering sweets as a reward for good behaviour		'Usually'	6.2%	6.2%	**2015:** Subgroup differences were not assessed **Change between 2010-15:** Subgroup differences were not assessed
Unrestricted snacking at home		Do not have to ask permission to snack	na	60.9%	**2015:** Overall, the proportion of adolescents with unrestricted snacking at home was significantly lower among girls and significantly higher among adolescents from rural areas and Middle Eastern and Asian cultural backgrounds

Dietary indicator	Government Policies and Programs	SPANS cut point	Prevalence (%)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
HOME-BASED DIETARY HABITS					
Takeaway and fast food intake		One or more times/week	29.1%	23.6%	**2015:** Overall, the proportion of adolescents eating takeaway and fast food ≥1/week was significantly higher among adolescents from urban areas and Asian cultural backgrounds **Change between 2010-15:** Overall, there were no significant changes in eating takeaway and fast food ≥1/week between 2010 and 2015. Within subgroups, eating takeaway and fast food ≥1/week significantly decreased among adolescents from rural areas, low SES backgrounds; English-speaking backgrounds and in the healthy weight and overweight BMI categories
FOOD AND DRINK PURCHASES AT SCHOOL					
Purchasing lunch from school canteen	Fresh Tastes @ School NSW Healthy School Canteen Strategy supports all NSW government schools to provide a healthy, nutritious canteen menu. Implementation of the strategy is mandatory for government school canteens through the Nutrition in Schools Policy	3-5 times/week	15.0%	14.6%	**2015:** Subgroup differences were not assessed **Change between 2010-15:** Sub-group differences were not assessed
Type of drinks purchased from school canteen	In 2007, the sale of sugar-sweetened drinks was banned in NSW government schools[50]	Sugar-sweetened beverage purchases (i.e., fruit juice, sport drinks, flavoured water, regular & diet soft drinks)	39.8%	25.1%	
Type of drinks purchased from school vending machine			17.9%	21.1%	

sig *Indicates statistically significant difference at P < 0.05.*
* *Comparisons are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*
n/a *not available.*

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CHAPTER 7: DENTAL HEALTH

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5-16 YEARS

3% of children and adolescents frequently had a toothache in the past 12 months

3% of children and adolescents frequently avoided eating some foods because of problems with their teeth or mouth in the past 12 months

67% of children and adolescents brushed their teeth ≥ 2 times a day

2015

- **3% of children and adolescents frequently had a toothache in the past 12 months**
  - Children and adolescents from low SES (4%) and middle SES (3%) backgrounds were more likely to report they frequently had a toothache in the past 12 months, compared with children and adolescents from high SES backgrounds (2%)
  - Children and adolescents from Middle Eastern cultural backgrounds were more likely to report that they frequently had a toothache in the past 12 months (6%), compared with children and adolescents from English-speaking backgrounds (3%)
  - Children and adolescents in the obese BMI category were more likely to report that they frequently had a toothache in the past 12 months (5%), compared with children and adolescents in the healthy weight BMI category (3%)
- **3% of children and adolescents frequently avoided eating some foods because of problems with their teeth or mouth in the past 12 months**
  - Children and adolescents from low SES (5%) and middle SES (3%) backgrounds were more likely to report that they frequently avoided some foods because of problems with teeth or mouth in the past 12 months (5%), compared with children and adolescents from high SES backgrounds (2%)
  - Children from Middle Eastern cultural backgrounds were more likely to report that they had a toothache in the past 12 months (6%), compared with children and adolescents from English-speaking backgrounds (3%)
  - Children and adolescents in the overweight BMI category were more likely to report that they frequently avoided some foods because of problems with teeth or mouth in the past 12 months (5%), compared with children and adolescents in the healthy weight BMI category (3%)
- **67% of children and adolescents brushed their teeth ≥ 2 times a day**
  - Children and adolescents from low SES (61%) and middle SES (66%) backgrounds were less likely to brush their teeth ≥ 2 times a day compared with children from high SES backgrounds (71%)
  - Children and adolescents from Middle Eastern cultural backgrounds (48%) were less likely, and children and adolescents from Asian cultural backgrounds were more likely (77%), to brush their teeth ≥ 2 times a day, compared with children and adolescents from English-speaking backgrounds (67%)
  - Children and adolescents in the overweight BMI category (63%) and in the obese BMI category (58%) were less likely to brush their teeth ≥ 2 times a day, compared with children and adolescents in the healthy weight BMI category (69%)

CONTEXT

Good dental health enables an individual to eat, speak and socialise without active disease, discomfort or embarrassment, which in turn contributes to general well-being.[1] Dental caries or tooth decay, an indicator of poor dental health, is the most commonly occurring oral disease in Australian children and teenagers.[2, 3] Dental caries are characterised by chronic loss of mineral from the tooth, with strong evidence showing that socio-behavioural and environmental factors are contributing factors to oral disease and health.[4] For example, dietary habits are significant in the development of chronic diseases and influence the development of dental caries.[5] Specifically, excessive amounts and frequent consumption of simple carbohydrates, primarily in the form of dietary sugars (including sugar-sweetened beverages), is significantly associated with increased dental caries risk.[6]

The importance of children's and adolescents' oral health has been highlighted by Australia's National Advisory Council on Dental Health: *A good oral health foundation in childhood is the key determinant of oral health throughout life. Children are a priority because improvements to child oral health and prevention will reduce the overall burden of disease and improve long-term oral health across the population.*[7] Based on the evidence of the importance of good dental health and growing concern for children's oral health,[8] indicators of dental health including: toothache during the past 12 months; avoidance of eating some foods because of problems with their teeth or mouth during the past 12 months; and tooth brushing behaviour have been included for the first time in SPANS 2015.

This chapter reports on the dental hygiene of children (i.e., Years K, 2, 4 and 6) and adolescents (i.e., Years 8 and 10) sampled by year group, sex and, where appropriate, by socio-demographic characteristics and BMI category. The findings are presented separately for children in primary school and adolescents in secondary school. The prevalence estimates (%) need to be interpreted along with their standard errors (SE); a large standard error means a less precise estimate.

PRIMARY SCHOOL

A methodological factor to consider in the interpretation of the findings on children in primary school is the difference in respondent. Parents reported on behalf of their child in years K, 2 and 4, while children in Year 6 self-reported, which may reflect differences in the reported prevalence of indicators of dental health between younger primary years and Year 6. The combined prevalence in primary school will reflect these differences in data collection methods.

TOOTHACHE IN THE PAST 12 MONTHS

Dental pain, or toothache, in children is strongly associated with dental caries (tooth decay) and impacts on a child's quality of life.[9] Oral hygiene and dietary factors contribute to dental caries and there is strong evidence that sugars are the most important dietary factor in the development of dental caries.[6] Sugar-sweetened beverages are a significant source of refinded carbohydrate (sugar) and consumption of these beverages and other high sugar, energy-dense foods products by Australian children is high.[10] Information on the population prevalence of toothache among children in primary school living in the general community will assist policy and intervention efforts.

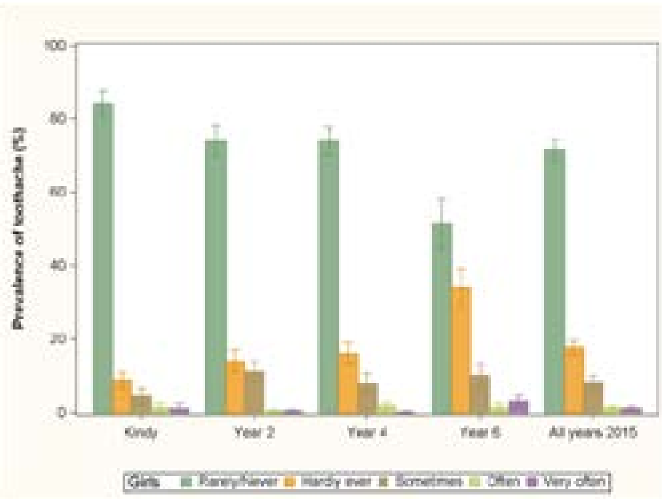
Table 7.1 and Figure 7.1 show the prevalence of a toothache during the past 12 months among children in primary school by sex and year group in 2015. Overall, 73% of children rarely or never had a toothache during the past 12 months. The prevalence of rarely or never having a toothache during the past 12 months appeared to be broadly consistent between boys and girls within year groups, and the prevalence of rarely or never having a toothache in the past 12 months appeared to decrease with age.

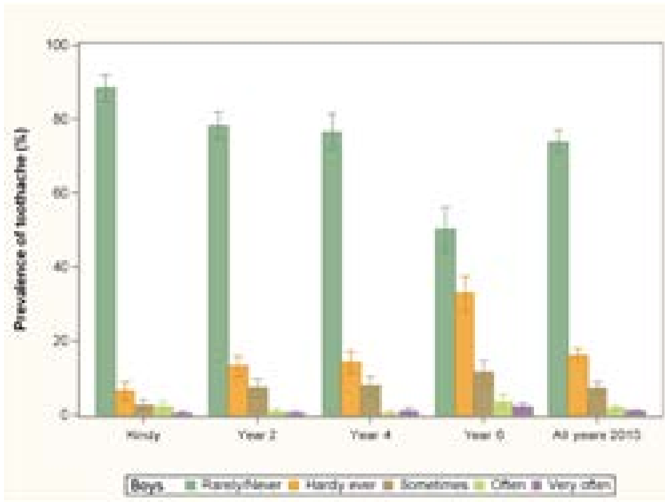
Table 7.1 Prevalence of having a toothache during the past 12 months among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	**Year 2**	**Year 4**	**Year 6**	**All years**
ALL					
Rarely/Never	86.3 (1.4)	76.1 (1.6)	75.3 (1.7)	50.8 (2.5)	72.8 (1.3)
Hardly ever	7.6 (0.8)	13.6 (1.1)	15.1 (1.0)	33.3 (1.9)	16.9 (0.6)
Sometimes	3.5 (0.6)	9.2 (1.1)	7.9 (1.1)	10.7 (1.3)	7.7 (0.7)
Often	1.8 (0.5)	0.6 (0.3)	1.2 (0.3)	2.5 (0.6)	1.5 (0.2)
Very often	0.7 (0.3)	0.4 (0.2)	0.5 (0.2)	2.7 (0.4)	1.1 (0.2)
GIRLS					
Rarely/Never	84.2 (1.7)	74.1 (2.1)	74.1 (1.9)	51.6 (3.2)	71.6 (1.5)
Hardly ever	8.8 (1.0)	14.0 (1.6)	16.0 (1.5)	34.0 (2.6)	17.7 (0.9)
Sometimes	4.4 (1.2)	11.1 (1.4)	8.0 (1.3)	10.0 (1.6)	8.3 (0.8)
Often	1.4 (0.6)	0.5 (0.2)	1.8 (0.5)	1.4 (0.5)	1.2 (0.2)
Very often	1.1 (0.7)	0.4 (0.2)	0.1 (0.1)	3.1 (0.7)	1.1 (0.2)
BOYS					
Rarely/Never	88.3 (1.7)	78.4 (1.8)	76.6 (2.4)	50.1 (3.1)	74.0 (1.6)
Hardly ever	6.4 (1.2)	13.1 (1.5)	14.1 (1.5)	32.7 (2.4)	16.2 (0.9)
Sometimes	2.6 (0.7)	7.3 (1.2)	7.8 (1.2)	11.4 (1.7)	7.1 (0.8)
Often	2.2 (0.7)	0.9 (0.4)	0.5 (0.3)	3.5 (1.0)	1.8 (0.4)
Very often	0.4 (0.3)	0.4 (0.2)	1.0 (0.5)	2.2 (0.5)	1.0 (0.2)

Note: No signifiance testing was conducted.

Figure 7.1 Prevalence of having a toothache during the past 12 months among children in primary school by sex and year group in 2015 (%, 95%CI)



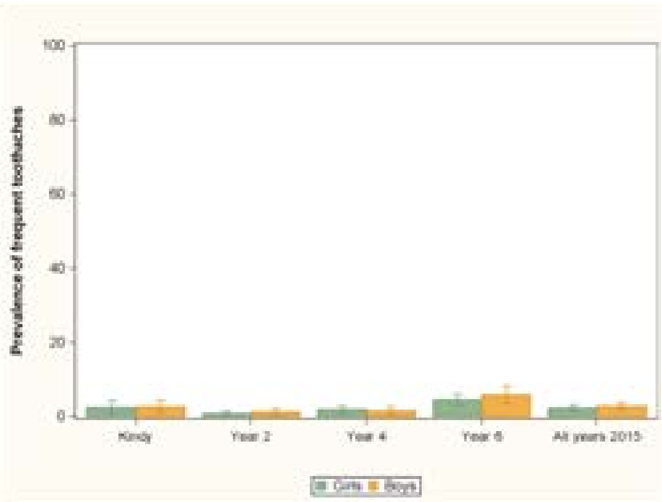


FREQUENT TOOTHACHE

In children, toothache affects important dimensions of life, causing suffering, disturbing eating and sleep, impeding participation in recreational activities and interfering with school attendance.[11] Hence the need to further examine children in primary school who reported that they frequently (i.e., often or very often) had a toothache in the past the12 months.

Table 7.2 and Figure 7.2 show the prevalence of having a toothache frequently during the past 12 months, among children in primary school by sex and year group in 2015. Overall, 3% of children frequently had a toothache during the past 12 months and there were were no significant differences between boys and girls.

Figure 7.2 Prevalence of having a toothache during the past 12 months among children in primary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 3% of children in primary school reported frequently having a toothache during the past 12 months. While the prevalence is relatively low, at a population level this equates to approximately 12,000 children of primary school age in NSW in 2015. Table 7.3 and Figure 7.3 show the proportion of children who reported that during the past 12 months they frequently had a toothache, by socio-demographic characteristics and BMI category in 2015.

Locality

Overall, there were no significant differences in the prevalence of frequent toothache between children from urban and rural areas.

Socio-economic status

Overall, the prevalence of frequent toothache was significantly higher among children from low SES (4%), compared with children from high SES (2%) backgrounds. The prevalence was significantly higher among girls from low SES (4%), compared with girls from high SES (2%) backgrounds and among boys from low SES (4%), compared with boys from high SES (2%) backgrounds.

Table 7.2 Prevalence of frequent toothache during the past 12 months among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Frequently had a toothache	2.6 (0.6)	1.0 (0.3)	1.7 (0.4)	5.1 (0.7)	2.6 (0.3)
Did not frequently have a toothache	97.4 (0.6)	99.0 (0.3)	98.3 (0.4)	94.9 (0.7)	97.4 (0.3)
GIRLS					
Frequently had a toothache	2.5 (0.9)	0.8 (0.3)	1.9 (0.5)	4.5 (0.7)	2.4 (0.4)
Did not frequently have a toothache	97.5 (0.9)	99.2 (0.3)	98.1 (0.5)	95.5 (0.7)	97.6 (0.4)
BOYS					
Frequently had a toothache	2.6 (0.8)	1.3 (0.5)	1.5 (0.5)	5.7 (1.1)	2.8 (0.4)
Did not frequently have a toothache	97.4 (0.8)	98.7 (0.5)	98.5 (0.5)	94.3 (1.1)	97.2 (0.4)

a Indicates statistically significant difference at P < 0.05 between sex and within year group.
No letter means there was no statistical difference.

Cultural background

Overall, the prevalence of frequent toothache was significantly higher among children from Middle Eastern (7%) cultural backgrounds, compared with children from English-speaking backgrounds (2%). The prevalence was significantly higher among girls from Middle Eastern (6%) cultural backgrounds, compared with girls from English-speaking (2%) backgrounds and among boys from Middle Eastern (8%) cultural backgrounds, compared with boys from English-speaking (3%) backgrounds.

Weight status

Overall, the prevalence of frequent toothache was significantly higher among children in the obese BMI category (5%), compared with children in the healthy weight BMI category (2%).

Table 7.3 Prevalence of frequent toothache during the past 12 months among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	**Year 2**	**Year 4**	**Year 6**	**All years**
ALL					
Locality					
Urban (ref)	3.0 (0.7)	1.2 (0.4)	2.0 (0.5)	5.1 (0.8)	2.8 (0.4)
Rural	1.1 (0.6)	0.3 (0.3)	0.8 (0.5)	5.1 (1.2)	1.8 (0.5)
SES					
Low	3.6 (1.2)	1.7 (1.0)	**2.9 (0.8) a**	**8.3 (2.0) a**	**4.1 (0.9) a**
Middle	2.6 (1.1)	0.8 (0.5)	1.9 (0.8)	4.8 (0.9)	2.5 (0.5)
High (ref)	2.1 (0.7)	1.0 (0.4)	1.0 (0.3)	3.7 (0.7)	1.9 (0.3)
Cultural background					
English-speaking (ref)	1.8 (0.6)	0.7 (0.2)	1.4 (0.4)	5.0 (0.7)	2.2 (0.3)
European	6.5 (6.0)	na	na	5.8 (5.4)	3.0 (2.0)
Middle Eastern	**8.3 (3.4) a**	**6.2 (3.0) a**	**6.5 (4.3) a**	6.6 (2.3)	**6.9 (2.1) a**
Asian	5.5 (3.5)	2.3 (1.6)	2.5 (1.8)	4.6 (2.4)	3.9 (1.8)
BMI category					
Thin	2.6 (1.8)	na	1.1 (1.1)	0.9 (0.9)	1.2 (0.6)
Healthy weight (ref)	1.9 (0.6)	0.8 (0.3)	1.5 (0.4)	5.0 (0.8)	2.3 (0.4)
Overweight	3.8 (2.0)	0.7 (0.5)	1.2 (0.9)	5.1 (1.3)	2.7 (0.8)
Obese	na	2.7 (2.0)	4.9 (2.9)	**11.4 (4.0) a**	**4.6 (1.3) a**

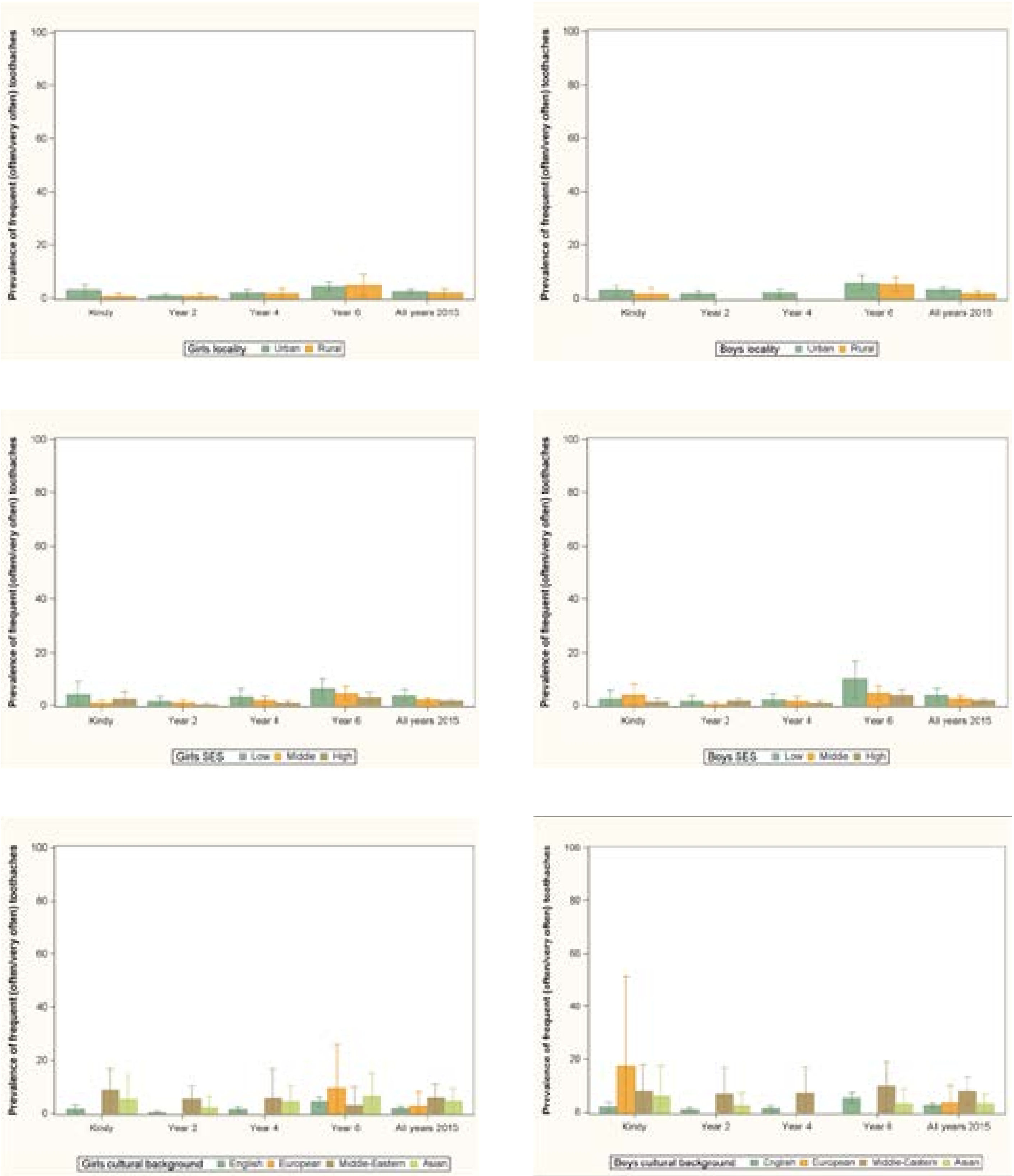
	2015				
	Year K	Year 2	Year 4	Year 6	All years
GIRLS					
Locality					
Urban (ref)	3.0 (1.0)	0.8 (0.4)	2.0 (0.6)	4.4 (0.8)	2.5 (0.4)
Rural	0.6 (0.6)	0.7 (0.7)	1.6 (1.1)	4.8 (2.0)	1.9 (0.9)
SES					
Low	4.4 (2.4)	1.7 (1.0)	**3.6 (1.5) a**	6.4 (1.9)	**4.0 (1.2) a**
Middle	1.0 (0.6)	1.1 (0.6)	2.0 (0.9)	4.7 (1.3)	2.2 (0.5)
High (ref)	2.8 (1.3)	0.3 (0.3)	1.0 (0.5)	3.3 (0.9)	1.8 (0.4)
Cultural background					
English-speaking (ref)	1.7 (0.8)	0.4 (0.2)	1.5 (0.5)	4.4 (0.8)	2.0 (0.4)
European	na	na	na	9.3 (8.2)	2.7 (2.6)
Middle Eastern	**8.6 (4.1) a**	**5.4 (2.4) a**	5.7 (5.4)	3.1 (3.4)	**5.8 (2.6) a**
Asian	5.2 (4.6)	2.2 (2.0)	4.4 (2.9)	6.3 (4.4)	4.5 (2.4)
BMI category					
Thin	na	na	na	1.4 (1.4)	0.4 (0.4)
Healthy weight (ref)	1.9 (0.9)	0.7 (0.4)	2.2 (0.7)	4.4 (1.0)	2.3 (0.5)
Overweight	6.8 (3.6)	0.6 (0.6)	0.7 (0.7)	3.2 (1.4)	2.5 (1.0)
Obese	na	1.9 (1.9)	4.6 (4.2)	**13.5 (4.1) a**	4.5 (1.5)
BOYS					
Locality					
Urban (ref)	2.9 (0.9)	1.7 (0.6)	2.0 (0.7)	5.9 (1.4)	3.1 (0.5)
Rural	1.5 (1.1)	na	na	5.3 (1.4)	1.7 (0.5)
SES					
Low	2.8 (1.6)	1.7 (1.2)	2.2 (1.2)	**10.1 (3.3) a**	**4.1 (1.2) a**
Middle	4.3 (2.0)	0.4 (0.4)	1.7 (1.0)	4.8 (1.3)	2.9 (0.6)
High (ref)	1.4 (0.8)	1.8 (0.7)	1.0 (0.5)	4.1 (1.1)	2.0 (0.5)
Cultural background					
English-speaking (ref)	2.0 (0.8)	1.0 (0.4)	1.4 (0.5)	5.5 (1.0)	2.5 (0.4)
European	**17.6 (16.7) a**	na	na	na	3.3 (3.3)
Middle Eastern	**8.0 (5.0) a**	**7.0 (4.9) a**	**7.3 (4.9) a**	9.8 (4.6)	**8.0 (2.7) a**
Asian	6.2 (5.8)	2.4 (2.5)	na	3.0 (2.9)	3.1 (1.9)
BMI category					
Thin	5.1 (3.6)	na	2.3 (2.3)	na	2.2 (1.2)
Healthy weight (ref)	2.0 (0.8)	0.9 (0.4)	0.8 (0.5)	5.5 (1.2)	2.3 (0.5)
Overweight	na	1.0 (1.0)	1.7 (1.7)	6.5 (2.0)	3.0 (0.9)
Obese	na	3.6 (2.4)	**5.2 (3.9) a**	9.5 (5.5)	4.6 (1.9)

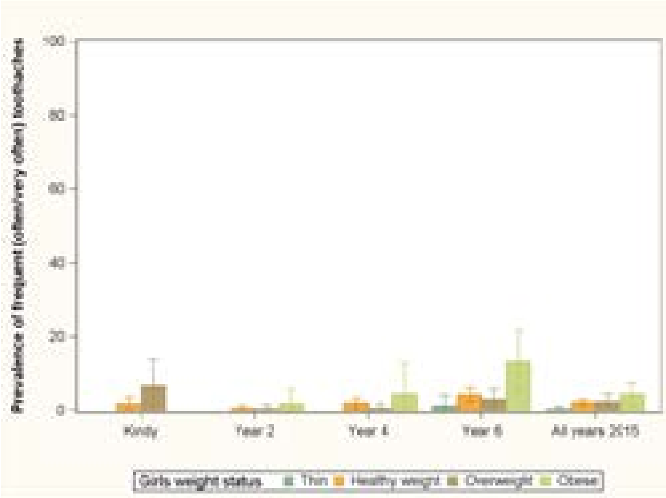
a *Indicates statistically significant difference at $P < 0.05$. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

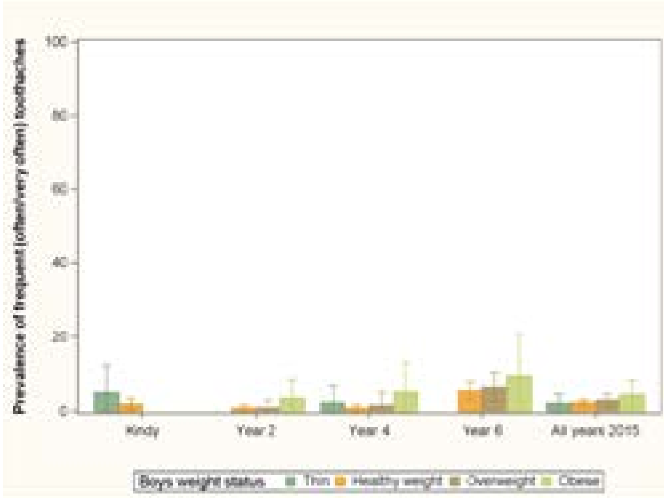
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 7.3 Prevalence of frequent toothache during the past 12 months among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)







AVOIDING FOOD BECAUSE OF TEETH OR MOUTH PROBLEMS

Teeth play an important role in enabling individuals to consume a varied diet and in preparing the food for digestion. Untreated dental caries in children are associated with discomfort or toothache which contributes to weight issues, growth and quality of life, as well as affecting cognitive development.[12-14] Dental caries and tooth loss can impact a child's ability to achieve their dietary goals and has been associated with a diet low in fruit and vegetables.[1, 15, 16]

Table 7.4 and Figure 7.4 show the prevalence of avoiding some foods because of problems with their teeth or mouth in the past 12 months among children in primary school in 2015 by sex and year group. Overall, 79% of children rarely or never avoided some foods because of problems with their teeth or mouth during the past 12 months. The prevalence of rarely or never avoiding some foods in the past 12 months because of problems with their teeth or mouth appeared to be broadly consistent between boys and girls within year groups and appeared to decrease with age.

Table 7.4 Prevalence of avoiding some foods because of tooth or mouth problems in the past 12-months among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Rarely/Never	90.4 (1.1)	81.6 (1.3)	81.9 (1.6)	57.5 (2.2)	78.5 (1.0)
Hardly ever	4.5 (0.7)	10.9 (0.9)	10.4 (0.9)	25.2 (1.8)	12.4 (0.6)
Sometimes	3.8 (0.7)	6.3 (0.7)	6.2 (0.9)	11.9 (1.0)	6.9 (0.6)
Often	0.9 (0.4)	0.6 (0.3)	1.2 (0.3)	3.7 (0.6)	1.6 (0.2)
Very often	0.3 (0.2)	0.6 (0.2)	0.2 (0.1)	1.6 (0.4)	0.7 (0.1)
GIRLS					
Rarely/Never	90.1 (1.4)	79.6 (1.7)	81.2 (1.7)	59.4 (2.5)	78.2 (1.1)
Hardly ever	5.0 (0.9)	11.6 (1.5)	9.8 (1.2)	23.7 (2.3)	12.2 (0.7)
Sometimes	3.1 (0.7)	7.5 (1.1)	7.5 (1.4)	12.2 (1.4)	7.4 (0.8)
Often	1.3 (0.6)	0.6 (0.3)	1.3 (0.4)	2.9 (0.8)	1.5 (0.3)
Very often	0.6 (0.3)	0.7 (0.3)	0.1 (0.1)	1.7 (0.7)	0.8 (0.2)
BOYS					
Rarely/Never	90.7 (1.5)	83.8 (1.7)	82.5 (2.3)	55.6 (2.8)	78.8 (1.3)
Hardly ever	4.0 (0.9)	10.1 (1.3)	11.1 (1.5)	26.7 (2.0)	12.5 (0.8)
Sometimes	4.6 (1.3)	5.0 (0.9)	4.9 (1.0)	11.7 (1.9)	6.4 (0.7)
Often	0.6 (0.3)	0.6 (0.4)	1.2 (0.5)	4.5 (1.0)	1.7 (0.3)
Very often	0.1 (0.1)	0.5 (0.3)	0.4 (0.3)	1.6 (0.4)	0.6 (0.1)

Note: No signifiance testing was conducted.

Figure 7.4 Prevalence of avoiding some foods because of tooth or mouth problems in the past 12 months among children in primary school by sex and year group in 2015 (%, 95%CI)

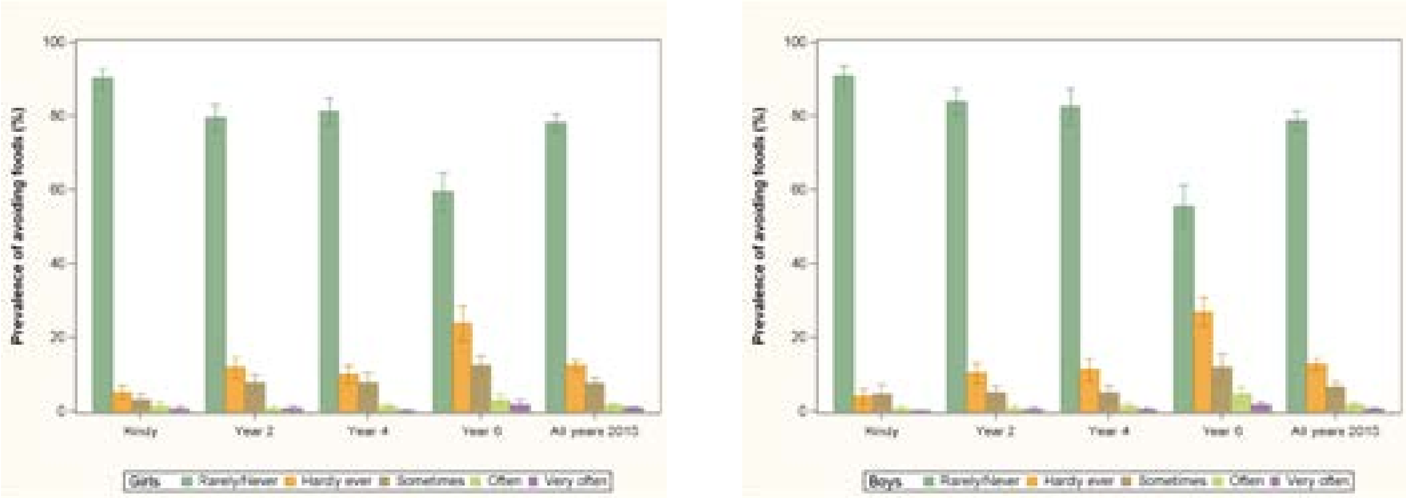


Table 7.5 Prevalence of frequently avoiding some foods because of problems with teeth or mouth during the past 12 months among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	**Year 2**	**Year 4**	**Year 6**	**All years**
ALL					
Frequently avoided food	1.3 (0.4)	1.2 (0.4)	1.5 (0.3)	5.4 (0.8)	2.3 (0.3)
Sometimes/hardly ever/rarely/never avoided foods	98.7 (0.4)	98.8 (0.4)	98.5 (0.3)	94.6 (0.8)	97.7 (0.3)
GIRLS					
Frequently avoided food	1.8 (0.7)	1.3 (0.5)	1.4 (0.4)	4.7 (0.9)	2.2 (0.3)
Sometimes/hardly ever/rarely/never avoided foods	98.2 (0.7)	98.7 (0.5)	98.6 (0.4)	95.3 (0.9)	97.8 (0.3)
BOYS					
Frequently avoided food	0.7 (0.4)	1.1 (0.5)	1.5 (0.6)	6.1 (1.2)	2.3 (0.4)
Sometimes/hardly ever/rarely/never avoided foods	99.3 (0.4)	98.9 (0.5)	98.5 (0.6)	93.9 (1.2)	97.7 (0.4)

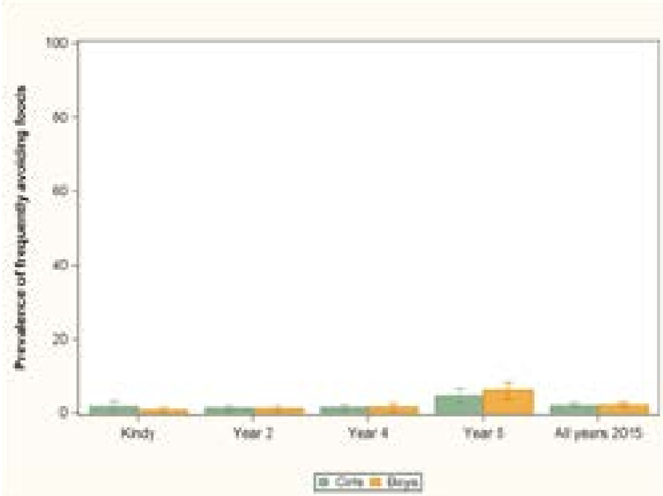
a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

FREQUENTLY AVOIDING FOOD BECAUSE OF TOOTHACHE

Children who frequently (i.e., often or very often) avoid food because of toothache potentially have a diet with less fruit and vegetables, which may affect diet quality and impact on the ability to meet nutritional guidelines.[15, 16] Understanding the proportion of children who frequently avoid foods because of problems with their teeth or mouth is important for current and future public health interventions.

Table 7.5 and Figure 7.5 show the prevalence of children who frequently avoided some foods because of problems with their teeth or mouth during the past 12 months, by sex and year group. Overall, 2% of children frequently avoided some foods because of problems with their teeth or mouth during the past 12 months and there were no significant differences between boys and girls.

Figure 7.5 Prevalence of frequently avoiding some foods because of problems with teeth or mouth during the past 12 months among children in primary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 2% of primary school children have frequently avoided some foods because of problems with their teeth or mouth during the past 12 months. While the prevalence is relatively low, at a population level this equates to approximately 8,000 children of primary school age in NSW in 2015. Table 7.6 and Figure 7.6 show the proportion of children who frequently avoided some foods because of problems with their teeth or mouth during the past 12 months by sex, year group socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of frequently avoiding food because of problems with teeth or mouth between rural and urban children.

Socio-economic status

2015: Overall, the prevalence of frequently avoiding food because of problems with teeth or mouth was significantly higher among children from low SES (4%), compared with children from high SES (2%) backgrounds. The prevalence was significantly higher among girls from low SES (4%), compared with girls from high SES (2%) backgrounds; and among boys from low SES (4%), compared with boys from high SES (1%) backgrounds.

Cultural background

2015: Overall, the prevalence of frequently avoiding food because of problems with teeth or mouth was significantly higher among children from Middle Eastern (6%) and Asian (4%) cultural backgrounds, compared with children from English-speaking backgrounds (2%). The prevalence was consistently significantly higher among girls from Asian (5%) cultural backgrounds, compared with girls from English-speaking (2%) backgrounds; and among boys from Middle Eastern (10%) cultural backgrounds, compared with boys from English-speaking (2%) backgrounds.

Weight status

2015: Overall, the prevalence of frequently avoiding food because of problems with teeth or mouth was significantly higher among children in the overweight BMI category (4%), compared with children in the healthy weight BMI category (2%). The prevalence was significantly higher for girls in the obese BMI category (5%), compared with girls in the healthy weight BMI category (2%); and among boys in the overweight BMI category (5%), compared with boys in the healthy weight BMI category (2%).

Table 7.6 Prevalence of frequently avoiding eating some foods because of problems with teeth or mouth during the past 12-months among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015				
	Year K	**Year 2**	**Year 4**	**Year 6**	**All years**
ALL					
Locality					
Urban (ref)	1.3 (0.5)	1.5 (0.5)	1.5 (0.4)	5.2 (0.8)	2.3 (0.3)
Rural	1.0 (0.7)	na	1.3 (0.6)	5.8 (1.6)	2.1 (0.6)
SES					
Low	2.6 (1.0)	1.6 (0.9)	**3.0 (1.1) a**	**10.0 (2.2) a**	**4.2 (0.6) a**
Middle	0.6 (0.4)	1.4 (0.8)	1.2 (0.4)	4.1 (0.9)	1.8 (0.3)
High (ref)	1.1 (0.6)	0.9 (0.3)	0.9 (0.4)	4.1 (0.8)	1.6 (0.3)
Cultural background					
English-speaking (ref)	0.9 (0.4)	1.0 (0.3)	0.9 (0.3)	5.1 (0.8)	1.9 (0.2)
European	na	na	na	13.4 (8.9)	3.3 (2.3)
Middle Eastern	3.0 (1.8)	**5.0 (3.3) a**	**6.7 (2.5) a**	11.5 (4.7)	**6.4 (1.2) a**
Asian	**4.9 (2.3) a**	2.2 (1.5)	**6.6 (2.7) a**	3.3 (2.0)	**4.4 (1.2) a**
BMI category					
Thin	2.4 (1.8)	na	1.9 (1.3)	1.5 (1.1)	1.5 (0.7)
Healthy weight (ref)	1.2 (0.5)	0.9 (0.3)	1.1 (0.4)	4.7 0.9)	1.9 (0.3)
Overweight	1.5 (1.5)	1.1 (0.8)	2.3 (1.4)	8.5 (2.3)	**3.7 (1.0) a**
Obese	na	**3.6 (2.1) a**	2.0 (1.4)	6.8 (3.1)	3.0 (1.0)
GIRLS					
Locality					
Urban (ref)	2.1 (0.8)	1.6 (0.6)	1.4 (0.4)	4.4 (1.0)	2.3 (0.3)
Rural	0.6 (0.5)	na	1.6 (1.0)	5.4 (1.7)	1.9 (0.6)
SES					
Low	2.3 (1.4)	2.6 (1.5)	3.0 (1.3)	**8.7 (2.6) a**	**4.1 (0.7) a**
Middle	0.8 (0.5)	1.4 (0.9)	1.2 (0.6)	3.5 (1.6)	1.7 (0.4)
High (ref)	2.3 (1.3)	0.7 (0.4)	0.9 (0.5)	3.6 (1.2)	1.8 (0.4)
Cultural background					
English-speaking (ref)	1.2 (0.6)	1.0 (0.4)	1.0 (0.4)	4.7 (0.9)	1.9 (0.3)
European	na	na	na	**21.8 (13.1) a**	6.2 (4.3)
Middle Eastern	na	**7.2 (4.0) a**	2.7 (1.8)	na	2.7 (1.2)
Asian	**7.4 (3.5) a**	2.1 (2.0)	**6.4 (3.4) a**	na	**5.0 (1.7) a**
BMI category					
Thin	na	na	na	1.5 (1.5)	0.4 (0.4)
Healthy weight (ref)	2.2 (0.9)	0.9 (0.4)	1.6 (0.6)	4.0 (1.1)	2.1 (0.4)
Overweight	2.6 (2.6)	0.6 (0.6)	na	5.7 (3.1)	2.1 (1.0)
Obese	na	**3.6 (2.5) a**	3.8 (2.5)	**13.7 (5.7) a**	**4.9 (1.6) a**

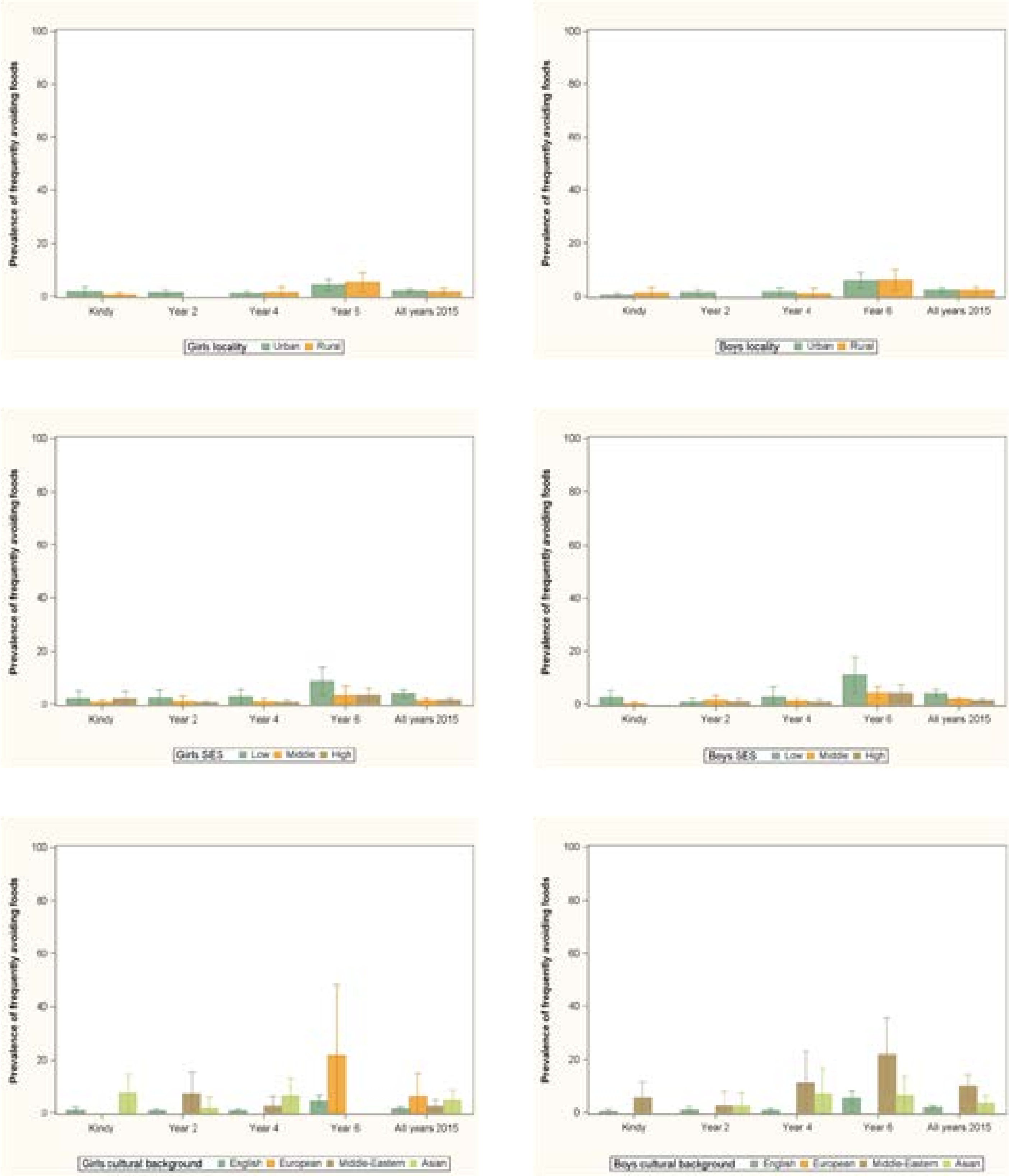
	2015				
	Year K	Year 2	Year 4	Year 6	All years
BOYS					
Locality					
Urban (ref)	0.5 (0.4)	1.5 (0.6)	1.7 (0.7)	6.1 (1.4)	2.3 (0.4)
Rural	1.4 (1.0)	na	1.0 (1.0)	6.2 (1.9)	2.2 (0.6)
SES					
Low	2.8 (1.4)	0.9 (0.8)	3.0 (2.0)	**11.2 (3.3) a**	**4.4 (0.8) a**
Middle	0.3 (0.3)	1.5 (1.1)	1.2 (0.8)	4.6 (1.2)	2.0 (0.4)
High (ref)	na	1.0 (0.5)	0.9 (0.5)	4.6 (1.5)	1.4 (0.4)
Cultural background					
English-speaking (ref)	0.5 (0.3)	1.0 (0.5)	0.8 (0.4)	5.5 (1.3)	1.9 (0.3)
European	na	na	na	na	na
Middle Eastern	**5.7 (3.0) a**	2.5 (2.6)	**11.4 (5.8) a**	**22.0 (6.8) a**	**10.1 (2.2) a**
Asian	na	2.4 (2.5)	**7.0 (4.9) a**	6.4 (3.7)	3.5 (1.5)
BMI category					
Thin	**4.8 (3.5) a**	na	**4.0 (2.7) a**	1.6 (1.6)	2.9 (1.2)
Healthy weight (ref)	0.3 (0.3)	0.9 (0.6)	0.6 (0.4)	5.5 (1.2)	1.7 (0.4)
Overweight	na	1.8 (1.3)	**4.8 (2.8) a**	**10.6 (2.9) a**	**5.4 (1.4) a**
Obese	na	3.6 (2.4)	na	na	1.0 (0.7)

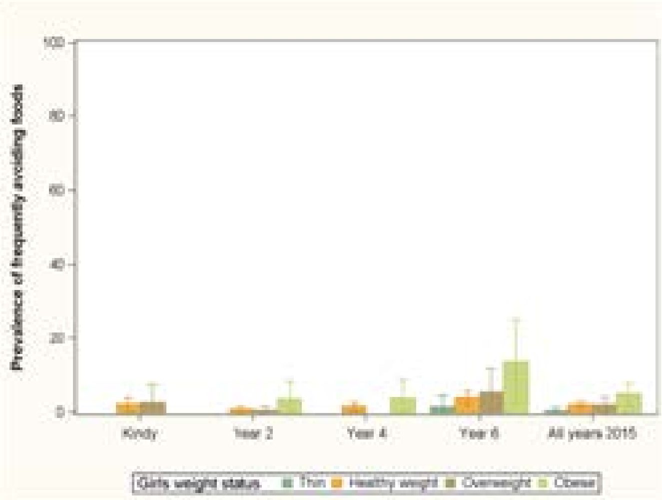
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

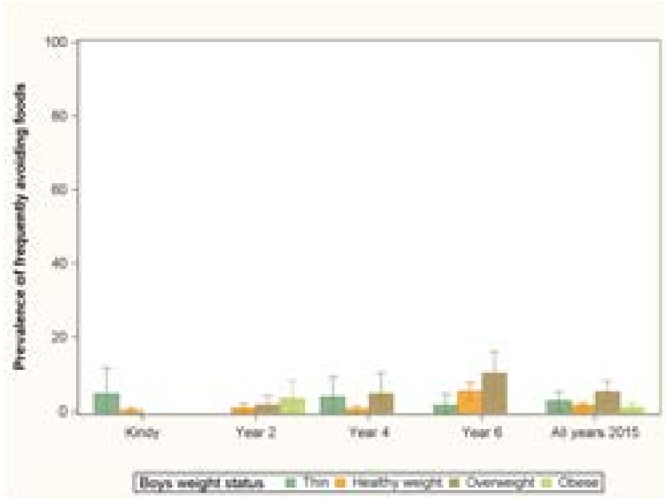
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 7.6 Prevalence of frequently avoiding eating some foods because of problems with teeth or mouth during the past 12 months among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)







BRUSHING TEETH

Plaque is a biofilm that coats teeth and can contribute to the development of dental caries and gum disease (gingivitis and periodontitis). The micro-organisms present in plaque are naturally present in the mouth, however failure to remove plaque through regular tooth brushing allows the plaque to build up which can lead to dental disease.[8, 17]

The Australasian Academy of Paediatric Dentistry's oral hygiene recommendations are to brush teeth twice a day, in the morning and in the evening, for at least two minutes with fluoride toothpaste; and that adults need to supervise tooth brushing for children under the age of eight years.[8] Establishing healthy tooth brushing behaviour during childhood is important because once established, tooth brushing habits persist through the life course. Programmes to help parents create a habit of brushing their young children's teeth show it is a behaviour that is also amenable to change.[18]

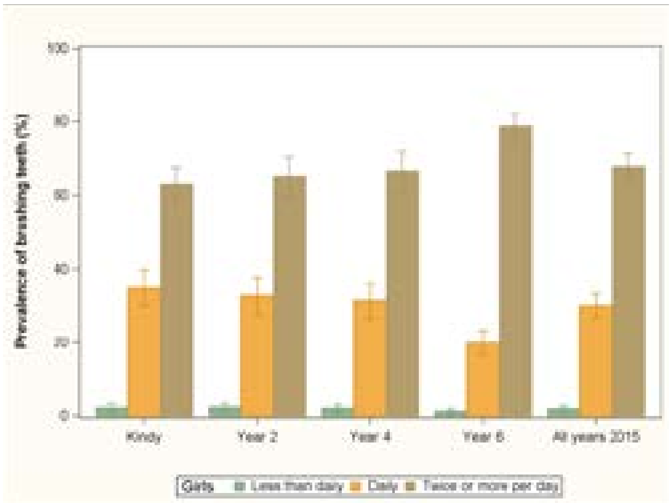
Table 7.7 and Figure 7.7 show the prevalence of tooth brushing among children by sex and year group in 2015. Overall, 66% of children brushed their teeth twice a day. The prevalence of brushing teeth twice a day appeared to be slightly higher among girls, compared with boys.

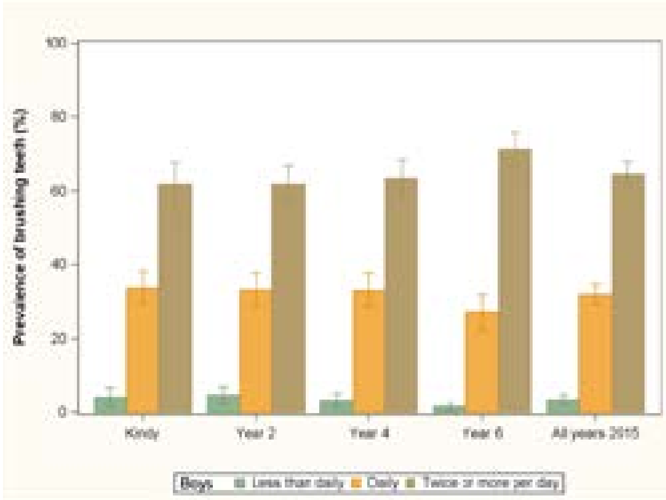
Table 7.7 Prevalence of tooth brushing among children in primary school by sex and year group in 2015 (%, SE)

Frequency	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Less than daily	3.2 (0.8)	3.5 (0.7)	2.7 (0.6)	1.5 (0.4)	2.8 (0.5)
Daily	34.3 (1.8)	33.0 (2.0)	32.2 (1.9)	23.5 (1.3)	31.0 (1.3)
Two or more per day	62.4 (2.1)	63.5 (2.2)	65.0 (2.1)	75.0 (1.4)	66.3 (1.6)
GIRLS					
Less than daily	2.2 (0.6)	2.3 (0.6)	2.1 (0.5)	1.3 (0.4)	2.0 (0.4)
Daily	34.8 (2.5)	32.7 (2.5)	31.4 (2.5)	19.9 (1.7)	30.0 (1.6)
Two or more per day	63.0 (2.4)	65.1 (2.7)	66.6 (2.7)	78.8 (1.8)	68.0 (1.8)
BOYS					
Less than daily	4.2 (1.3)	4.8 (1.1)	3.4 (0.9)	1.7 (0.6)	3.6 (0.7)
Daily	33.9 (2.1)	33.3 (2.3)	33.1 (2.3)	27.2 (2.4)	32.0 (1.4)
Two or more per day	61.9 (2.9)	61.9 (2.5)	63.4 (2.4)	71.2 (2.3)	64.5 (1.7)

Note: No signifiance testing was conducted.

Figure 7.7 Prevalence of tooth brushing among children in primary school by sex and year group in 2015 (%, 95%CI)





BRUSHING TEETH TWICE A DAY

The national recommendation for children is to brush teeth twice a day.[8] Within the home setting, tooth brushing behaviour appeared to be closely linked to other routine activities that take place in the morning or evening.[19] An important factor for parents initiating tooth brushing habits in their children is the day-to-day stability of those morning and/or evening routines.[20]

Table 7.8 and Figure 7.8 show the prevalence of tooth brushing two or more times a day in children by sex and year group in 2015.

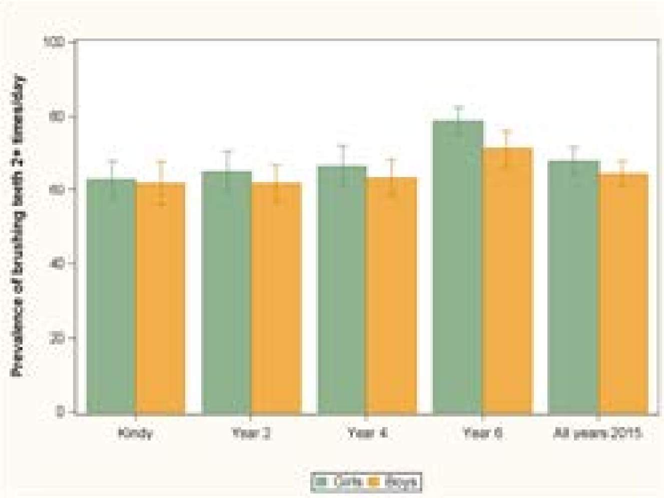
Overall 66% of children brush their teeth two or more times a day and a significantly higher proportion of girls brush their teeth two or more times a day (68%), compared with boys (65%).

Table 7.8 Prevalence of brushing teeth twice a day among children in primary school by sex and year group in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Brush twice a day	62.4 (2.1)	63.5 (2.2)	65.0 (2.1)	75.0 (1.4)	66.3 (1.6)
Brush less than twice a day	37.6 (2.1)	36.5 (2.2)	35.0 (2.1)	25.0 (1.4)	33.7 (1.6)
GIRLS					
Brush twice a day	63.0 (2.4)	65.1 (2.7)	66.6 (2.7)	**78.8 (1.8) a**	**68.0 (1.8) a**
Brush less than twice a day	37.0 (2.4)	34.9 (2.7)	33.4 (2.7)	21.2 (1.8)	32.0 (1.8)
BOYS					
Brush twice a day	61.9 (2.9)	61.9 (2.5)	63.4 (2.4)	71.2 (2.3)	64.5 (1.7)
Brush less than twice a day	38.1 (2.9)	38.1 (2.5)	36.6 (2.4)	28.8 (2.3)	35.5 (1.7)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 7.8 Prevalence of brushing teeth twice a day among children in primary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that two in three (66%) children in primary school meet the recommendation of brushing their teeth twice a day. Understanding the differences in socio-demographic characteristics of children who do and do not meet the tooth brushing recommendation is important to inform policy and intervention decisions.

Table 7.9 and Figure 7.9 show the prevalence of meeting the recommendation for tooth brushing among children in primary school stratified by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were differences in the prevalence of brushing teeth twice a day between rural and urban children. The prevalence was significantly higher among boys from rural areas (70%), compared with boys from urban areas (63%).

Socio-economic status

2015: Overall, the prevalence of brushing teeth twice a day was significantly lower among children from low SES (58%), compared with children from high SES (70%) backgrounds. The prevalence was significantly lower among girls from low SES (57%), compared with girls from high SES (72%) backgrounds; and among boys from low SES (58%), compared with boys from high SES (68%) backgrounds.

Cultural background

2015: Overall, the prevalence of brushing teeth twice a day was significantly higher among children from Asian (75%) cultural backgrounds and significantly lower among children from Middle Eastern (43%) cultural backgrounds, compared with children from English-speaking backgrounds (67%). The prevalence was significantly lower among girls from Middle Eastern (40%) cultural backgrounds, compared with girls from English-speaking (69%) backgrounds. The prevalence was significantly lower among boys from Middle Eastern (47%) cultural backgrounds and significantly higher among boys from Asian (77%) cultural backgrounds, compared with boys from English-speaking (65%) backgrounds.

Weight status

2015: Overall, the prevalence of brushing teeth twice a day was significantly lower among children in the obese (61%) BMI category, compared with children in the healthy weight category (67%).

Table 7.9 Prevalence of brushing teeth twice a day among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Locality					
Urban (ref)	62.2 (2.4)	61.7 (2.6)	64.7 (2.7)	73.3 (1.6)	65.2 (1.9)
Rural	63.3 (4.0)	**70.8 (2.9) a**	66.2 (3.0)	**80.5 (2.2) a**	70.2 (2.2)
SES					
Low	**53.7 (4.4) a**	**51.1 (5.2) a**	**53.4 (3.7) a**	73.1 (3.1)	**57.5 (3.2) a**
Middle	**61.0 (2.3) a**	67.0 (3.7)	**63.9 (3.1) a**	75.2 (2.2)	66.9 (2.1)
High (ref)	67.3 (2.6)	66.6 (2.3)	71.9 (2.5)	75.8 (2.0)	70.0 (1.7)
Cultural background					
English-speaking (ref)	63.4 (2.0)	63.3 (2.2)	66.2 (2.1)	74.2 (1.5)	66.6 (1.5)
European	45.7 (12.7)	67.8 (8.4)	71.3 (11.3)	**95.6 (4.4) a**	70.1 (4.7)
Middle Eastern	**33.8 (4.6) a**	**35.1 (8.8) a**	**28.9 (7.3) a**	81.7 (4.0)	**43.4 (2.7) a**
Asian	68.7 (5.7)	**84.8 (4.4) a**	74.2 (5.3)	79.2 (5.7)	**75.4 (1.9) a**
BMI category					
Thin	62.5 (5.8)	58.6 (8.0)	67.7 (5.6)	80.2 (4.6)	67.4 (3.1)
Healthy weight (ref)	62.6 (2.4)	65.2 (2.2)	66.2 (2.3)	76.6 (1.5)	67.3 (1.5)
Overweight	65.9 (5.7)	59.9 (4.8)	61.5 (3.5)	**70.0 (3.0)**	64.5 (2.5)
Obese	58.8 (4.7)	56.1 (6.6)	62.1 (6.5)	**67.0 (4.9) a**	**60.8 (2.9) a**
GIRLS					
Locality					
Urban (ref)	63.6 (2.9)	63.1 (3.0)	66.6 (3.3)	77.6 (2.2)	67.3 (2.1)
Rural	60.1 (3.4)	**73.8 (4.3) a**	66.4 (4.1)	83.0 (2.2)	70.6 (2.7)
SES					
Low	**54.0 (5.0) a**	**51.3 (7.2) a**	**49.3 (4.9) a**	74.8 (5.5)	**57.2 (3.2) a**
Middle	64.7 (3.9)	68.5 (4.0)	**66.5 (2.9) a**	79.5 (2.2)	69.7 (1.8)
High (ref)	65.8 (3.4)	67.9 (2.8)	75.0 (3.2)	80.1 (2.5)	71.6 (2.3)
Cultural background					
English-speaking (ref)	63.2 (2.8)	1.0 (0.5)	68.8 (2.5)	78.5 (1.7)	68.8 (1.6)
European	53.9 (17.0)	na	67.7 (12.5)	100.0 (0.0)	69.4 (6.8)
Middle Eastern	**33.2 (8.5) a**	2.5 (2.6)	**20.5 (5.1) a**	80.0 (9.8)	**40.3 (4.2) a**
Asian	69.7 (6.0)	2.4 (2.5)	69.4 (7.8)	75.5 (9.3)	74.0 (2.6)
BMI category					
Thin	64.0 (7.2)	na	68.9 (7.0)	81.1 (5.7)	71.3 (3.1)
Healthy weight (ref)	63.2 (2.6)	0.9 (0.6)	67.2 (3.3)	78.5 (2.2)	68.6 (1.9)
Overweight	67.6 (7.6)	1.8 (1.3)	65.2 (4.3)	77.7 (4.4)	68.2 (3.0)
Obese	57.0 (9.1)	3.6 (2.4)	62.9 (7.1)	81.0 (5.7)	61.5 (4.7)

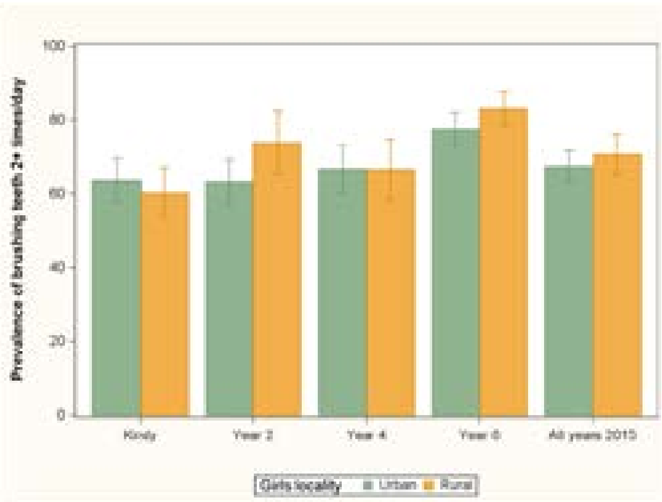
	2015				
	Year K	Year 2	Year 4	Year 6	All years
BOYS					
Locality					
Urban (ref)	60.8 (3.2)	60.1 (2.8)	62.6 (2.8)	68.8 (2.8)	62.9 (2.0)
Rural	66.3 (6.6)	68.1 (3.9)	66.1 (4.9)	**78.3 (3.1) a**	**69.7 (2.1) a**
SES					
Low	**53.3 (5.9) a**	**50.9 (4.2) a**	**57.2 (5.0) a**	71.4 (5.3)	**57.9 (3.5) a**
Middle	**57.1 (5.6) a**	65.3 (4.4)	61.0 (4.8)	71.2 (4.2)	63.9 (3.2)
High (ref)	68.8 (2.7)	65.1 (3.5)	68.7 (3.1)	71.0 (3.0)	68.3 (1.7)
Cultural background					
English-speaking (ref)	63.6 (2.9)	61.1 (2.5)	63.6 (2.7)	70.0 (2.5)	64.5 (1.7)
European	31.8 (20.7)	77.9 (8.4)	74.9 (16.3)	88.5 (11.7)	70.9 (7.7)
Middle Eastern	**34.3 (12.7) a**	**34.8 (12.0) a**	**38.8 (11.5) a**	83.2 (7.9)	**46.6 (5.6) a**
Asian	66.5 (9.5)	**83.2 (6.3) a**	**80.9 (6.2) a**	82.6 (8.0)	**77.4 (2.9) a**
BMI category					
Thin	60.9 (9.4)	46.3 (9.7)	66.4 (8.2)	78.4 (6.5)	62.4 (5.1)
Healthy weight (ref)	61.9 (3.7)	63.6 (2.7)	65.2 (3.2)	74.7 (2.7)	66.0 (1.8)
Overweight	63.6 (7.5)	56.2 (6.0)	57.5 (4.7)	**64.0 (3.8) a**	60.5 (3.0)
Obese	60.9 (8.7)	63.8 (10.7)	61.2 (7.7)	**53.0 (9.4) a**	60.0 (3.6)

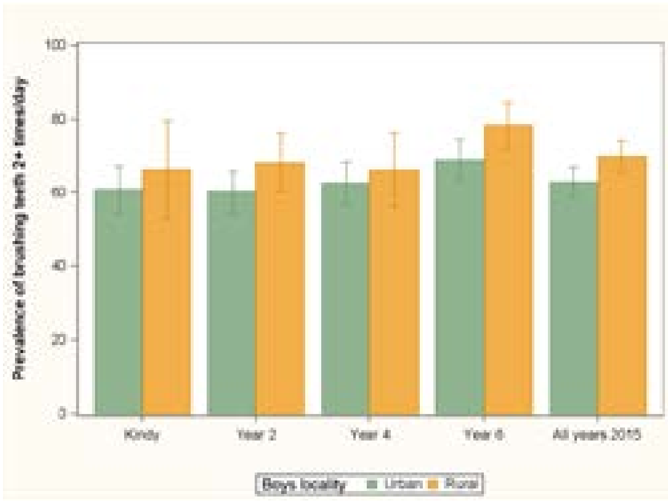
a *Indicates statistically significant difference at $P < 0.05$. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

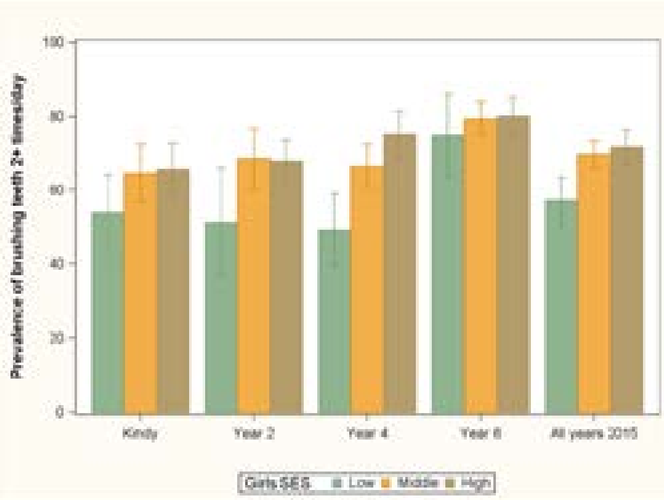
na *Indicates statistical significance could not be calculated due to low numbers.*

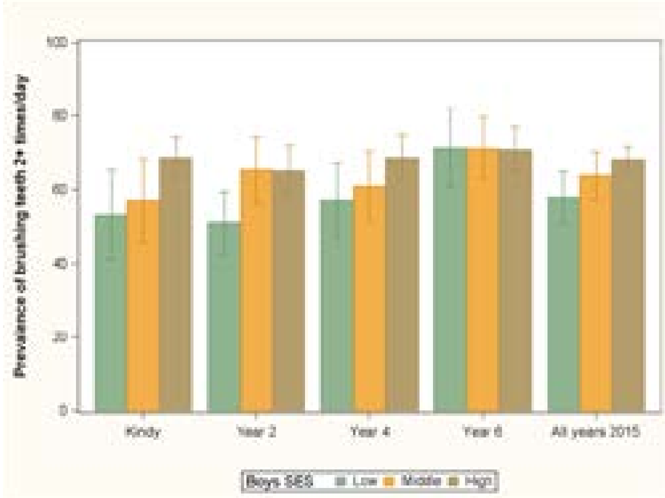
No letter means there was no statistical difference.

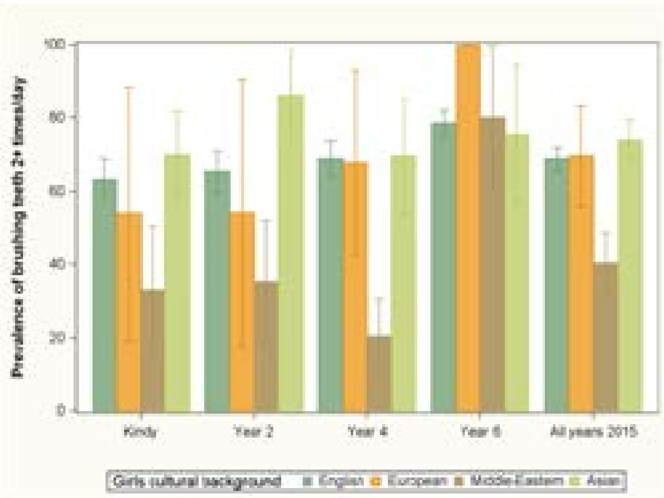
Figure 7.9 Prevalence of brushing teeth twice a day among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

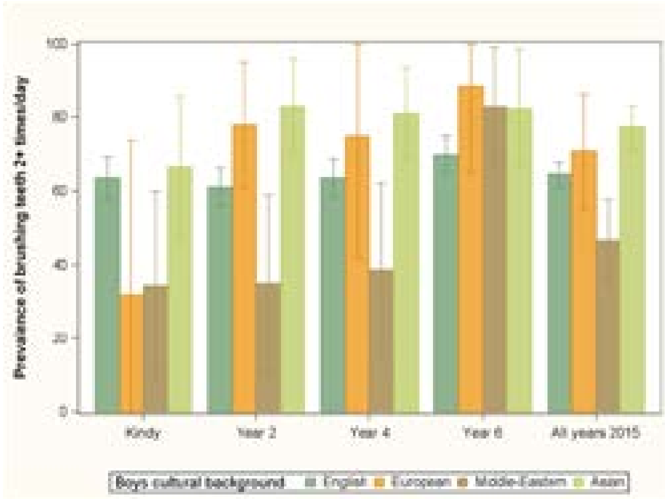


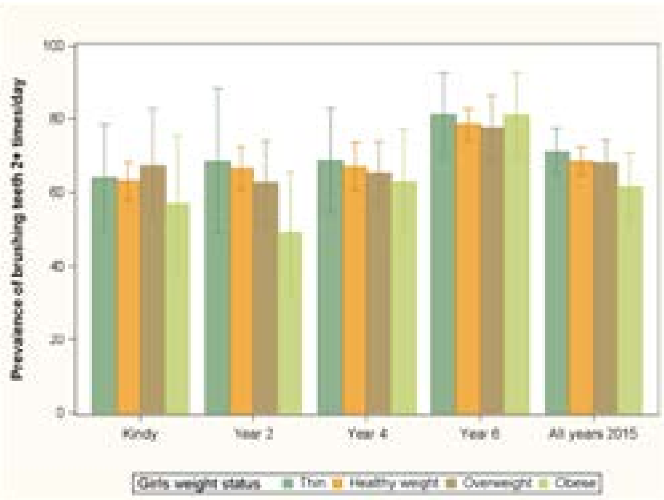


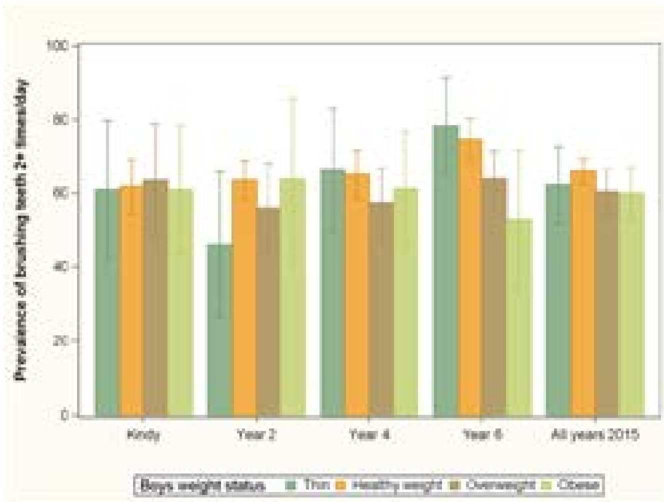

Prevalence of brushing teeth 2+ times/day
0
20
40
60
80
100
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls SES
Low
Middle
High


Prevalence of brushing teeth 2+ times/day
0
20
40
60
80
100
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys SES
Low
Middle
High


Prevalence of brushing teeth 2+ times/day
0
20
40
60
80
100
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of brushing teeth 2+ times/day
0
20
40
60
80
100
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of brushing teeth 2+ times/day
0
20
40
60
80
100
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of brushing teeth 2+ times/day
0
20
40
60
80
100
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

SUMMARY OF THE DENTAL HEALTH OF CHILDREN IN PRIMARY SCHOOL

The table below summarises the prevalence of indicators of dental health in children in primary school.

Dental indicator	Australian Dental Association policy[21]	SPANS cut point	Prevalence (%)		Significant subgroup findings for 2015*
			2010	2015	
Toothache in the past 12 months	3.1 All children should begin regular dental examinations by the age of one year 3.2 All children from around seven years of age must have their oral health, including developing occlusion, periodically assessed by a dentist 3.3 The aim of governments in the provision of dental services to children should be to improve and maintain their dental health through preventive interventions and, for eligible children, also through provision of treatment 3.4 Dental treatment in the public sector should be targeted to disadvantaged children	Frequently (i.e., often or very often)	Not collected in 2010	2.6%	**2015:** Overall, the proportion of children with a frequent toothache was significantly higher among children from low SES backgrounds; from Middle Eastern cultural backgrounds; and in the obese BMI category
Avoiding some foods because of tooth or mouth problems in the past 12 months		Frequently (i.e., often or very often)		2.3%	**2015:** Overall, the proportion of children that frequently avoid food was significantly higher among children from low SES backgrounds; from Middle Eastern and Asian cultural backgrounds; and in the overweight BMI category
Brushing teeth	Brush teeth twice a day, in the morning and in the evening, for at least two minutes with fluoride toothpaste. Adults need to supervise tooth brushing in children age < 8 years [8]	≥2 times/day		66.3%	**2015:** Overall, the proportion of children that brush teeth ≥2 times/day was significantly lower among children from low SES backgrounds; and from Middle Eastern cultural backgrounds; and in the obese BMI category

* *Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background and; thin, overweight and obese compared with healthy weight BMI category. n/a = not available*

SECONDARY SCHOOL

The following section describes indicators of dental health of adolescents in Years 8 and 10 in secondary schools participating in SPANS. The findings are based on self-report responses of the adolescents. The prevalence estimates (%) need to be interpreted along with their standard errors (SE); a large standard error means a less precise estimate.

TOOTHACHE IN THE PAST 12 MONTHS

Dental pain, or toothache, in adolescents is strongly associated with dental caries (tooth decay) and impacts on their quality of life.[9] Oral hygiene and dietary factors contribute to dental caries and there is strong evidence that sugars are the most important dietary factor in the development of dental caries. Sugar-sweetened beverages are a significant source of refinded carbohydrate (sugar) and consumption of these beverages and other high sugar, energy-dense foods products by Australian adolescents is high.[10] Information on the prevalence of toothache among adolescents in secondary school will assist policy and intervention efforts.

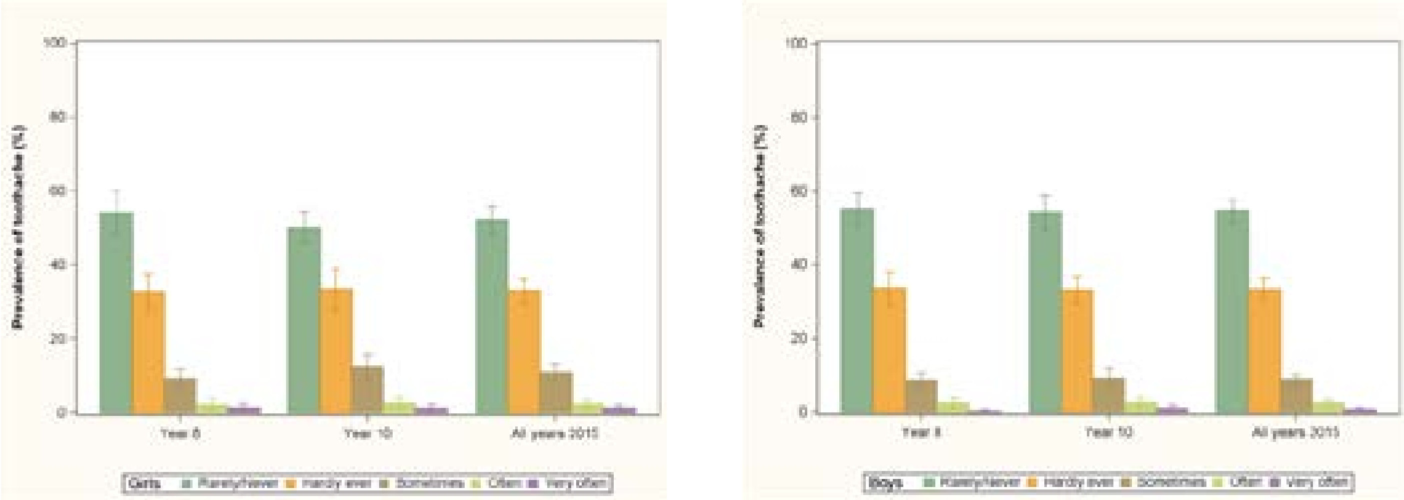
Table 7.10 and Figure 7.10 show the prevalence of toothache during the past 12 months in adolescents by sex and year group in 2015. Overall 53% of adolescents rarely or never had a toothache during the past 12 months. The prevalence of rarely or never having a toothache during the past 12 months appeared appeared to be broadly consistent between boys and girls within year groups, and the prevalence of rarely or never having a toothache in the past 12 months appeared to decrease with age.

Table 7.10 Prevalence of having a toothache during the past 12 months among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Rarely/Never	54.7 (2.0)	52.2 (1.6)	53.4 (1.2)
Hardly ever	33.1 (1.7)	33.2 (1.6)	33.1 (1.2)
Sometimes	8.9 (0.8)	10.8 (1.2)	9.9 (0.7)
Often	2.4 (0.7)	2.7 (0.5)	2.6 (0.4)
Very often	0.9 (0.3)	1.1 (0.4)	1.0 (0.3)
GIRLS			
Rarely/Never	54.2 (3.0)	50.2 (2.2)	52.2 (1.9)
Hardly ever	32.6 (2.4)	33.3 (2.7)	32.9 (1.7)
Sometimes	9.4 (1.3)	12.5 (1.8)	11.0 (1.1)
Often	2.3 (0.8)	2.7 (0.8)	2.5 (0.6)
Very often	1.5 (0.6)	1.2 (0.6)	1.4 (0.5)
BOYS			
Rarely/Never	55.1 (2.2)	54.2 (2.3)	54.6 (1.5)
Hardly ever	33.6 (2.3)	33.1 (1.8)	33.3 (1.4)
Sometimes	8.5 (1.1)	9.0 (1.5)	8.8 (0.8)
Often	2.5 (0.8)	2.7 (0.8)	2.6 (0.5)
Very often	0.3 (0.2)	1.0 (0.4)	0.7 (0.3)

Note: No signifiance testing was conducted.

Figure 7.10 Prevalence of having a toothache during the past 12-months among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



ADOLESCENTS WITH FREQUENT TOOTHACHE

In adolescents, toothache affects important dimensions of life, causing suffering, disturbing eating and sleep, impeding participation in recreational activities, and interfering with school attendance.[11] Hence there is a need to further examine adolescents in secondary school who reported that they frequently (i.e., often or very often) had a toothache in the past 12 months.

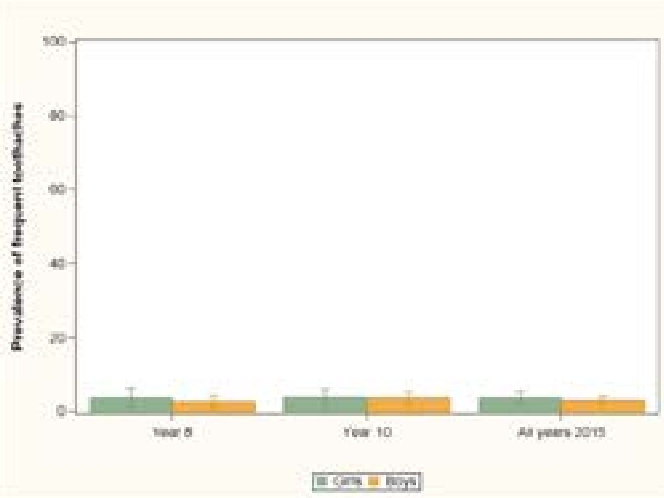
Table 7.11 and Figure 7.11 show the prevalence of having a toothache frequently during the past 12 months, among adolescents by sex and year group in 2015. Overall, 4% of adolescents reported that they frequently had a toothache during the past 12 months and there were no significant differences between boys and girls.

Table 7.11 Prevalence of frequent toothache during the past 12 months among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Frequently had a toothache	3.3 (0.9)	3.9 (0.7)	3.6 (0.6)
Did not frequently have a toothache	96.7 (0.9)	96.1 (0.7)	96.4 (0.6)
GIRLS			
Frequently had a toothache	3.8 (1.3)	4.0 (1.1)	3.9 (0.9)
Did not frequently have a toothache	96.2 (1.3)	96.0 (1.1)	96.1 (0.9)
BOYS			
Frequently had a toothache	2.9 (0.8)	3.8 (0.8)	3.3 (0.6)
Did not frequently have a toothache	97.1 (0.8)	96.2 (0.8)	96.7 (0.6)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 7.11 Prevalence of frequent toothache during the past 12 months among adolescents in secondary school by sex and year group in 2015 (%,95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 4% of adolescents in secondary school reported frequently having a toothache during the past 12 months. While the prevalence is relatively low, at a population level this equates to approximately 9,500 adolescents in NSW in 2015. Table 7.12 and Figure 7.12 show the proportion of adolescents who had a frequent toothache during the past 12 months stratified by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of frequent toothache between adolescents from urban and rural areas.

Socio-economic status

2015: Overall, the prevalence of frequent toothache was significantly higher among boys from middle SES (5%), compared with boys from high SES (2%) backgrounds.

Cultural background

2015: Overall, there were no significant differences in the prevalence of having a frequent toothache between adolescents from different cultural backgrounds.

Weight status

2015: Overall, the prevalence of frequent toothache was significantly higher among girls in the obese BMI category (10%), compared with girls in the healthy weight BMI category (3%).

Table 7.12 Prevalence of frequent toothache during the past 12 months among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Locality			
Urban (ref)	4.2 (1.2)	3.6 (0.7)	3.9 (0.7)
Rural	**1.0 (0.5) a**	4.7 (1.9)	2.8 (0.9)
SES			
Low	**4.0 (1.9) a**	3.3 (1.2)	3.6 (1.0)
Middle	**5.3 (1.9) a**	4.0 (1.4)	4.7 (1.2)
High (ref)	0.9 (0.4)	4.4 (1.1)	2.6 (0.7)
Cultural background			
English-speaking (ref)	3.0 (0.9)	4.3 (0.8)	3.6 (0.6)
European	5.0 (3.7)	na	2.4 (2.0)
Middle Eastern	5.8 (3.7)	1.7 (1.6)	3.9 (1.7)
Asian	4.3 (2.1)	2.1 (1.2)	3.0 (1.4)

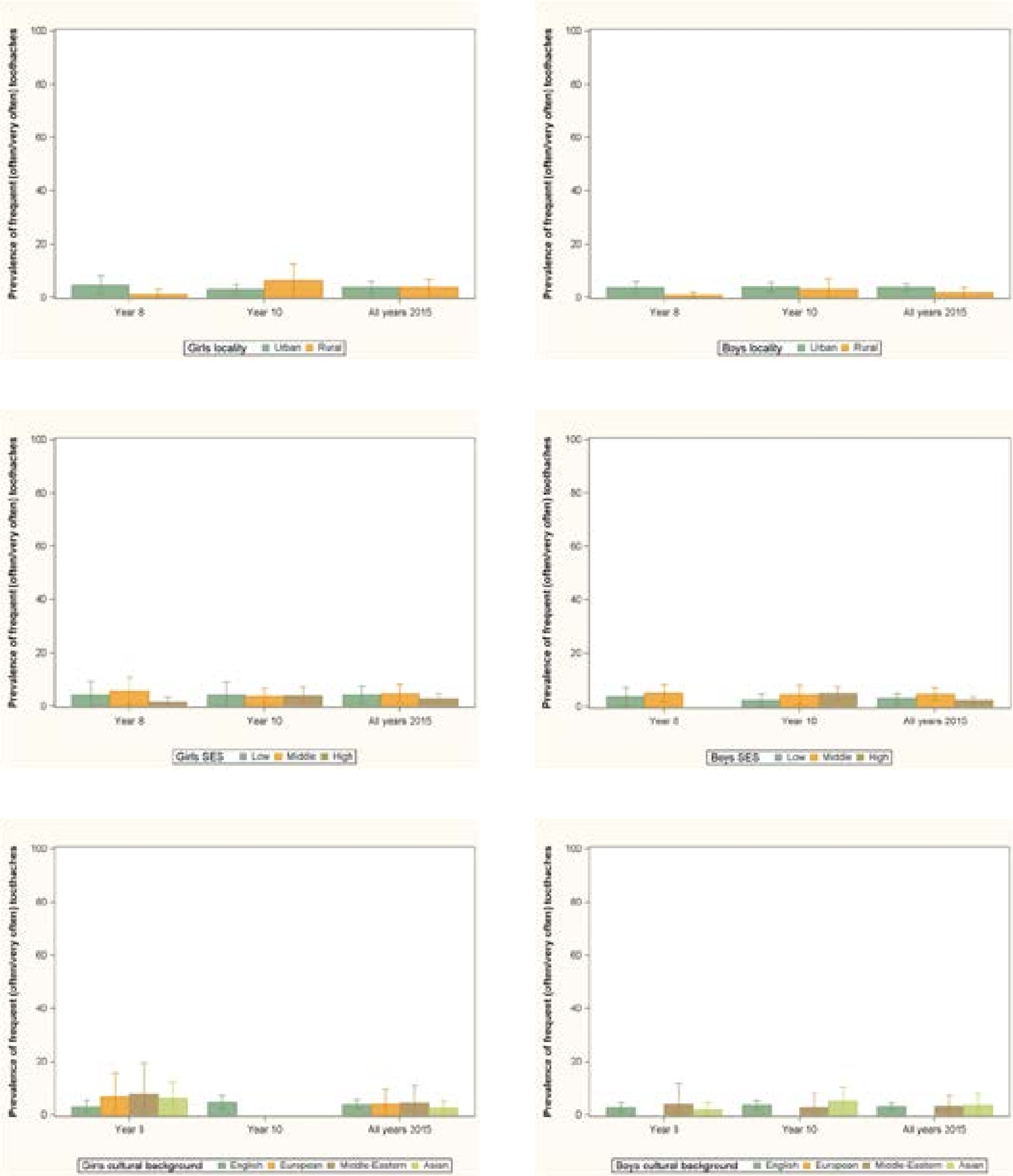
	2015		
	Year 8	**Year 10**	**All years**
BMI category			
Thin	2.4 (1.7)	7.7 (3.3)	4.8 (1.7)
Healthy weight (ref)	2.9 (0.9)	3.6 (0.8)	3.2 (0.6)
Overweight	3.4 (1.9)	3.9 (1.3)	3.6 (1.3)
Obese	**8.4 (4.1) a**	3.4 (2.3)	5.9 (2.3)
GIRLS			
Locality			
Urban (ref)	4.7 (1.7)	3.2 (0.9)	3.9 (1.0)
Rural	1.3 (0.9)	6.3 (3.1)	3.8 (1.5)
SES			
Low	4.3 (2.4)	4.2 (2.3)	4.3 (1.5)
Middle	**5.7 (2.6) a**	3.7 (1.5)	4.7 (1.7)
High (ref)	1.7 (0.8)	4.0 (1.6)	2.9 (0.9)
Cultural background			
English-speaking (ref)	3.2 (1.1)	4.8 (1.3)	4.0 (0.9)
European	6.8 (4.4)	na	4.1 (2.8)
Middle Eastern	7.7 (5.9)	na	4.5 (3.2)
Asian	6.2 (3.1)	na	2.5 (1.4)
BMI category			
Thin	4.7 (3.4)	2.4 (2.2)	3.7 (2.0)
Healthy weight (ref)	2.9 (0.9)	3.6 (1.1)	3.2 (0.7)
Overweight	3.6 (2.2)	4.9 (2.3)	4.3 (1.9)
Obese	**12.1 (7.2) a**	7.1 (4.8)	**9.8 (4.5) a**
BOYS			
Locality			
Urban (ref)	3.7 (1.1)	4.0 (0.8)	3.9 (0.7)
Rural	0.7 (0.7)	3.2 (1.9)	1.9 (1.0)
SES			
Low	3.7 (1.7)	2.4 (1.2)	3.0 (0.9)
Middle	4.9 (1.5)	4.4 (1.8)	**4.6 (1.2) a**
High (ref)	na	4.8 (1.3)	2.3 (0.7)
Cultural background			
English-speaking (ref)	2.9 (0.9)	3.8 (0.9)	3.3 (0.6)
European	na	na	na
Middle Eastern	4.1 (3.8)	2.9 (2.6)	3.5 (1.8)
Asian	1.8 (1.5)	5.2 (2.7)	3.7 (2.0)
BMI category			
Thin	na	**12.2 (5.7) a**	5.8 (2.9)
Healthy weight (ref)	2.9 (1.1)	3.6 (1.0)	3.3 (0.7)
Overweight	3.3 (2.0)	2.7 (1.4)	3.0 (1.2)
Obese	4.1 (2.9)	na	2.0 (1.3)

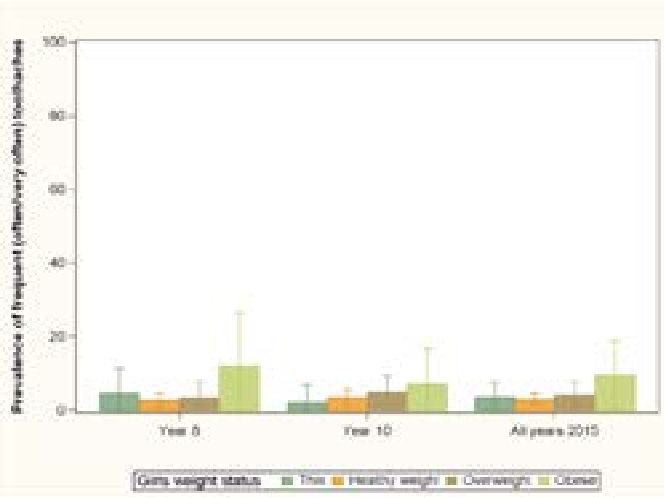
a *Indicates statistically significant difference at $P < 0.05$. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

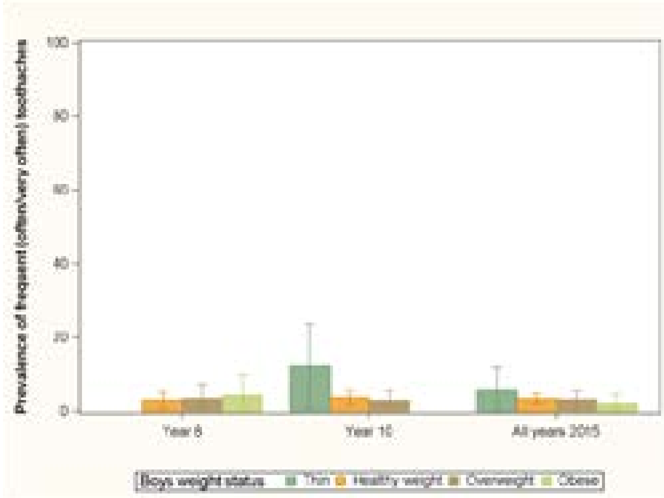
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 7.12 Prevalence of frequent toothache during the past 12 months among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)





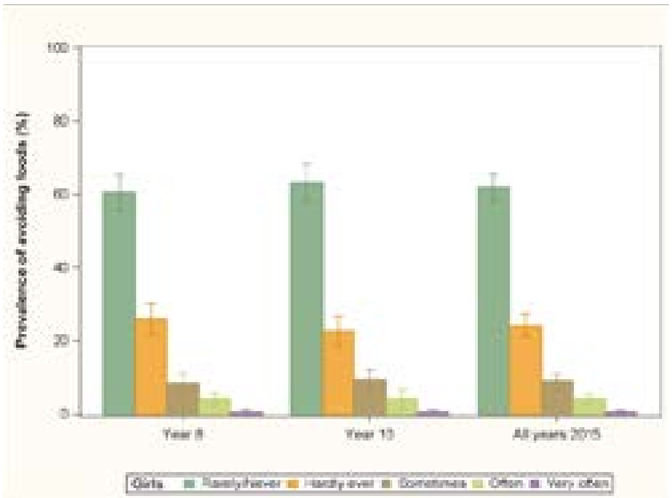


AVOIDING FOOD BECAUSE OF TEETH OR MOUTH PROBLEMS

Teeth are important in enabling consumption of a varied diet and in preparing the food for digestion. Untreated dental caries in adolescents are associated with discomfort or toothache which contributes to weight issues, growth and quality of life, as well as affecting cognitive development.[12, 13, 14] Dental caries and tooth loss can impact on an adolescent's ability to achieve their daily dietary goals and has been associated with a diet low in fruit and vegetables.[1, 15, 16]

Table 7.13 and Figure 7.13 show the prevalence of avoiding some foods because of tooth or mouth problems in the past 12 months among adolescents by sex and year group in 2015. Overall, 62% of adolescents rarely or never avoided some foods because of problems with their teeth or mouth during the past 12 months. The prevalence appeared to be broadly consistent between boys and girls.

Figure 7.13 Prevalence of avoiding some foods because of tooth or mouth problems in the past 12 months among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



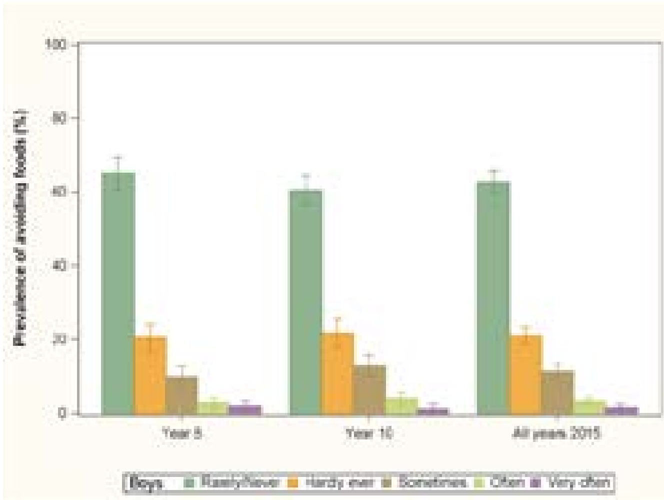


Table 7.13 Prevalence of avoiding some foods because of tooth or mouth problems in the past 12 months among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	Year 10	All years
ALL			
Rarely/Never	62.9 (1.6)	61.9 (1.5)	62.4 (1.1)
Hardly ever	23.2 (1.3)	22.2 (1.5)	22.7 (1.0)
Sometimes	9.2 (1.0)	11.1 (1.2)	10.1 (0.8)
Often	3.4 (0.6)	3.9 (0.8)	3.7 (0.5)
Very often	1.3 (0.4)	0.9 (0.4)	1.1 (0.3)
GIRLS			
Rarely/Never	60.7 (2.4)	63.2 (2.5)	62.0 (1.9)
Hardly ever	26.0 (2.1)	22.7 (2.0)	24.3 (1.5)
Sometimes	8.5 (1.4)	9.4 (1.4)	9.0 (1.1)
Often	4.1 (0.9)	4.1 (1.3)	4.1 (0.8)
Very often	0.7 (0.3)	0.7 (0.3)	0.7 (0.2)
BOYS			
Rarely/Never	65.1 (2.2)	60.5 (2.0)	62.8 (1.5)
Hardly ever	20.4 (1.9)	21.8 (1.9)	21.1 (1.2)
Sometimes	9.8 (1.4)	12.8 (1.5)	11.3 (0.9)
Often	2.7 (0.7)	3.8 (0.8)	3.2 (0.5)
Very often	1.9 (0.6)	1.1 (0.7)	1.5 (0.5)

Note: No signifiance testing was conducted.

AVOIDING FOOD BECAUSE OF TEETH OR MOUTH PROBLEMS

Adolescents who frequently (i.e., often or very often) avoid food because of toothache potentially have a diet with less fruit and vegetables, which may affect diet quality and impact on the ability to meet nutritional guidelines.[15, 16] Understanding the proportion of adolescents who frequently avoided foods because of problems with their teeth or mouth is important for current and future public health interventions.

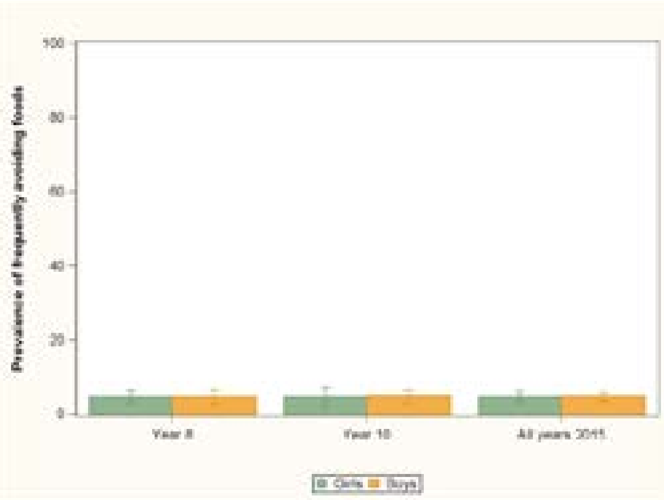
Table 7.14 and Figure 7.14 show the prevalence of adolescents who frequently avoided some foods because of problems with their teeth or mouth during the past 12 months by sex and year group in 2015. Overall, 5% of adolescents frequently avoided some foods because of problems with their teeth or mouth during the past 12-months and there were no significant differences between boys and girls.

Table 7.14 Prevalence of frequently avoiding some foods because of problems with teeth or mouth during the past 12 months among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	Year 10	All years
ALL			
Frequently avoided food	4.7 (0.7)	4.8 (0.9)	4.7 (0.5)
Sometimes/hardly ever/rarely/never avoided foods	95.3 (0.7)	95.2 (0.9)	95.3 (0.5)
GIRLS			
Frequently avoided food	4.7 (0.9)	4.7 (1.3)	4.7 (0.8)
Sometimes/hardly ever/rarely/never avoided foods	95.3 (0.9)	95.3 (1.3)	95.3 (0.8)
BOYS			
Frequently avoided food	4.6 (1.0)	4.9 (0.9)	4.8 (0.7)
Sometimes/hardly ever/rarely/never avoided foods	95.4 (1.0)	95.1 (0.9)	95.2 (0.7)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 7.14 Prevalence of frequently avoiding some foods because of problems with teeth or mouth during the past 12-months among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 5% of adolescents in secondary school had frequently avoided some foods because of problems with their teeth or mouth during the past 12 months. While the prevalence is relatively low, at a population level this equates to approximately 12,000 adolescents in NSW in 2015. Table 7.15 and Figure 7.15 show the prevalence of frequently avoiding some foods because of problems with teeth or mouth during the past 12 months among adolescents stratified by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of frequently avoiding some foods because of problems with the teeth or mouth during the past 12 months between adolescents from urban and rural areas.

Socio-economic status

2015: Overall, the prevalence of frequently avoiding some foods because of problems with the teeth or mouth during the past 12 months was significantly higher among adolescents from low SES (6%) and middle SES (6%), compared with adolescents from high SES (3%) backgrounds. The prevalence was significantly higher among girls from low SES (6%), compared with girls from high SES (3%) backgrounds; and among boys from low SES (6%) and middle SES (6%), compared with boys from high SES backgrounds (3%).

Cultural background

2015: Overall, the prevalence of frequently avoiding some foods because of problems with the teeth or mouth during the past 12 months was significantly lower among girls from Asian cultural backgrounds (2%), compared with girls from English-speaking backgrounds (5%).

Weight status

2015: Overall, the prevalence of frequently avoiding some foods because of problems with the teeth or mouth during the past 12 months was significantly higher among girls in the overweight BMI category (7%), compared with girls in the healthy weight BMI category (4%).

Table 7.15 Prevalence of frequently avoiding eating some foods because of problems with teeth or mouth during the past 12 months among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Locality			
Urban (ref)	5.4 (0.8)	4.0 (0.7)	4.7 (0.5)
Rural	2.9 (1.2)	7.0 (2.5)	4.9 (1.2)
SES			
Low	**6.5 (1.3) a**	5.2 (1.9)	**5.8 (1.0) a**
Middle	4.6 (1.1)	**6.6 (1.5) a**	**5.6 (0.8) a**
High (ref)	3.0 (0.7)	2.7 (0.8)	2.8 (0.5)
Cultural background			
English-speaking (ref)	4.6 (0.7)	5.0 (1.0)	4.8 (0.6)
European	na	na	na
Middle Eastern	10.8 (6.5)	na	5.7 (3.3)
Asian	1.1 (1.1)	4.5 (2.2)	3.1 (1.2)
BMI category			
Thin	1.8 (1.2)	5.5 (2.5)	3.5 (1.3)
Healthy weight (ref)	4.1 (0.7)	4.8 (0.9)	4.4 (0.6)
Overweight	7.0 (1.7)	6.1 (2.0)	6.6 (1.3)
Obese	5.8 (2.6)	na	2.9 (1.4)
GIRLS			
Locality			
Urban (ref)	5.3 (1.1)	3.7 (0.8)	4.4 (0.7)
Rural	3.2 (1.2)	8.0 (4.3)	5.6 (2.0)
SES			
Low	6.0 (2.1)	6.4 (3.1)	**6.2 (1.7) a**
Middle	5.5 (1.6)	4.8 (1.6)	5.1 (1.1)
High (ref)	2.7 (1.0)	3.0 (1.1)	2.9 (0.7)
Cultural background			
English-speaking (ref)	4.5 (0.9)	5.5 (1.5)	5.0 (0.9)
European	na	na	na
Middle Eastern	11.8 (9.4)	na	6.9 (5.4)
Asian	1.9 (1.6)	1.3 (1.3)	**1.6 (0.9) a**

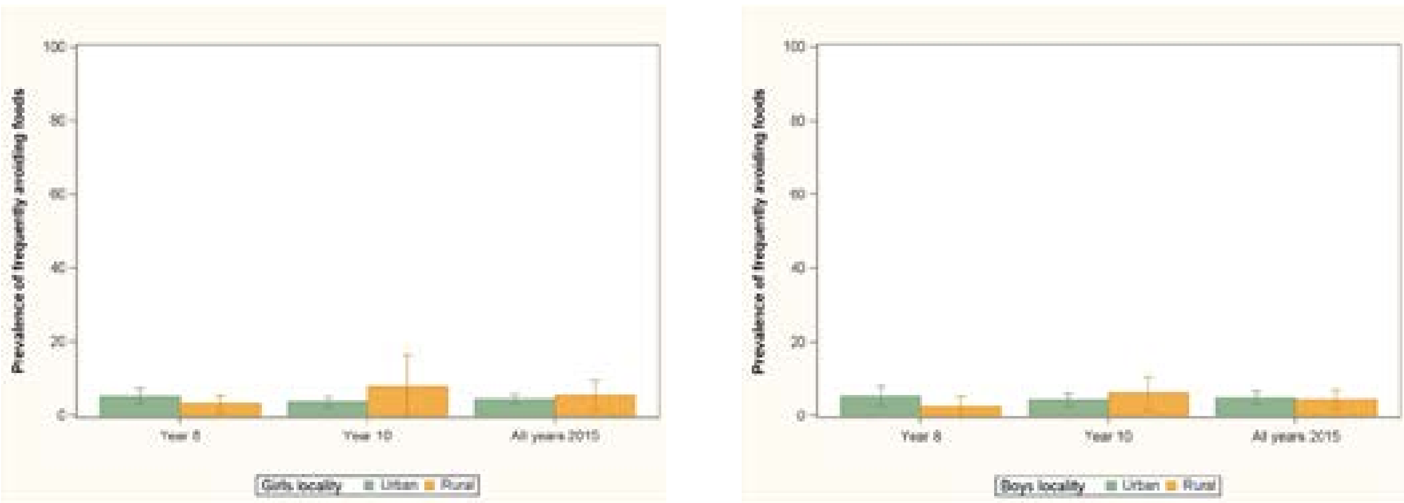
	2015		
	Year 8	Year 10	All years
BMI category			
Thin	3.6 (2.5)	2.4 (2.2)	3.1 (1.6)
Healthy weight (ref)	4.3 (0.9)	4.2 (1.3)	4.2 (0.8)
Overweight	5.7 (2.3)	**8.4 (3.0) a**	**7.1 (1.8) a**
Obese	5.8 (3.9)	na	3.1 (2.2)
BOYS			
Locality			
Urban (ref)	5.4 (1.3)	4.4 (0.8)	4.9 (0.8)
Rural	2.6 (1.4)	6.2 (2.2)	4.4 (1.3)
SES			
Low	7.0 (1.7)	4.1 (1.5)	**5.5 (1.2) a**
Middle	3.8 (1.6)	**8.2 (2.1) a**	**5.9 (1.2) a**
High (ref)	3.3 (1.2)	2.3 (1.1)	2.8 (0.8)
Cultural background			
English-speaking (ref)	4.7 (1.2)	4.6 (1.0)	4.7 (0.8)
European	na	na	na
Middle Eastern	9.8 (8.2)	na	4.8 (4.2)
Asian	na	9.4 (4.1)	5.4 (2.6)
BMI category			
Thin	na	8.1 (4.0)	3.9 (2.2)
Healthy weight (ref)	3.8 (1.2)	5.4 (1.4)	4.6 (1.0)
Overweight	8.1 (2.5)	3.8 (1.8)	6.1 (1.5)
Obese	5.7 (2.9)	na	2.6 (1.5)

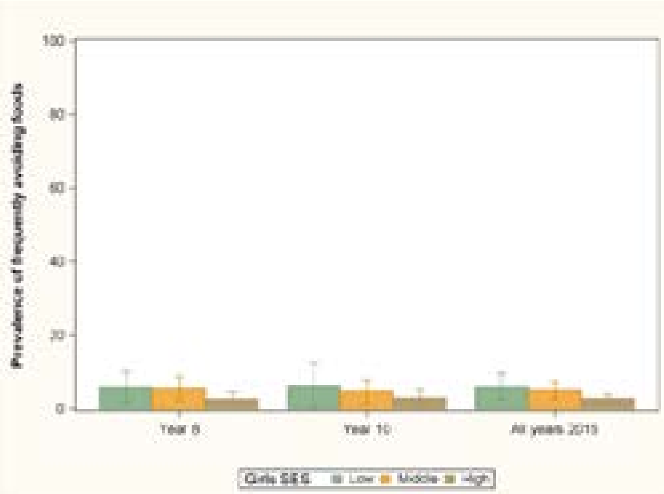
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

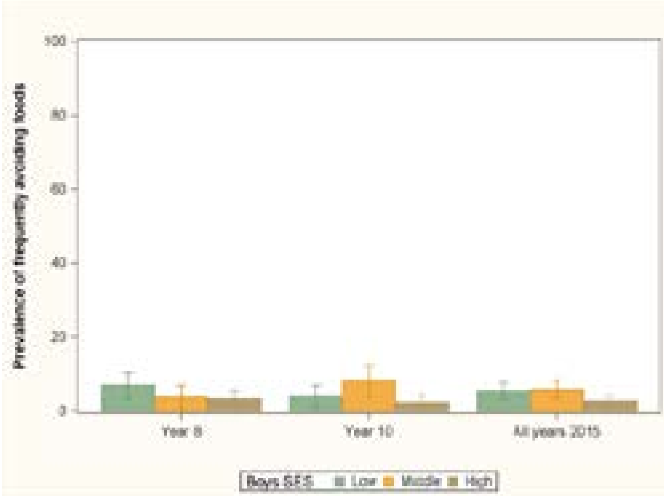
na *Indicates statistical significance could not be calculated due to low numbers.*

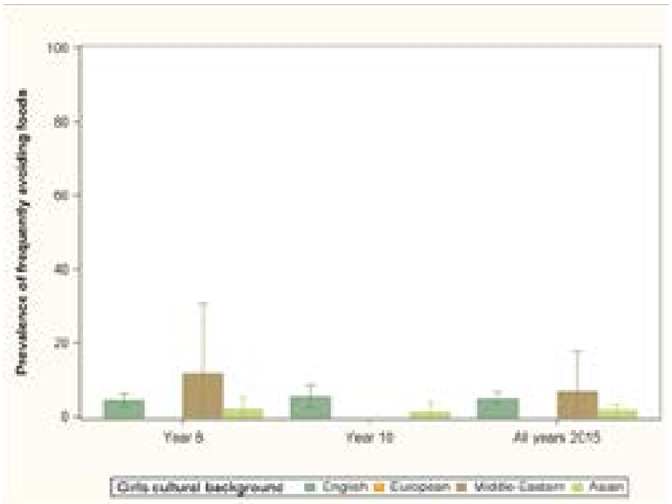
No letter means there was no statistical difference.

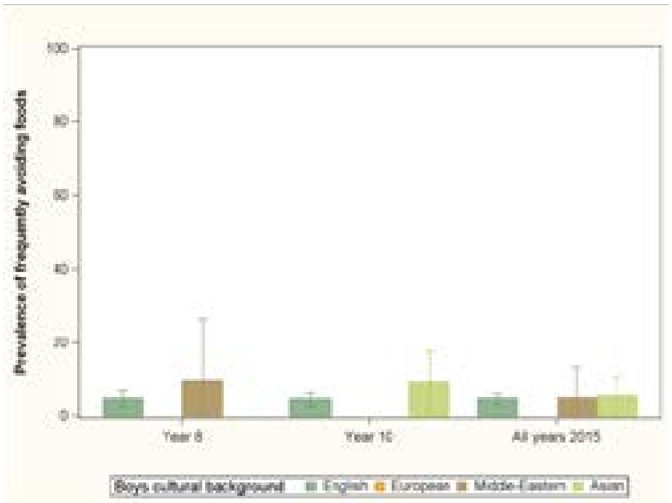
Figure 7.15 Prevalence of frequently avoiding eating some foods because of problems with teeth or mouth during the past 12 months among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

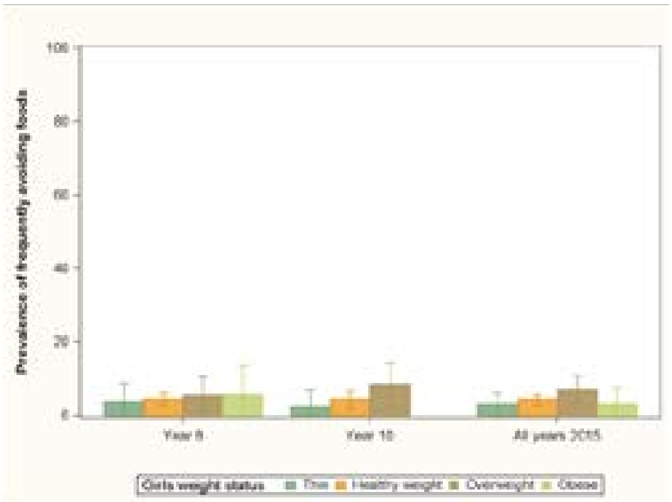


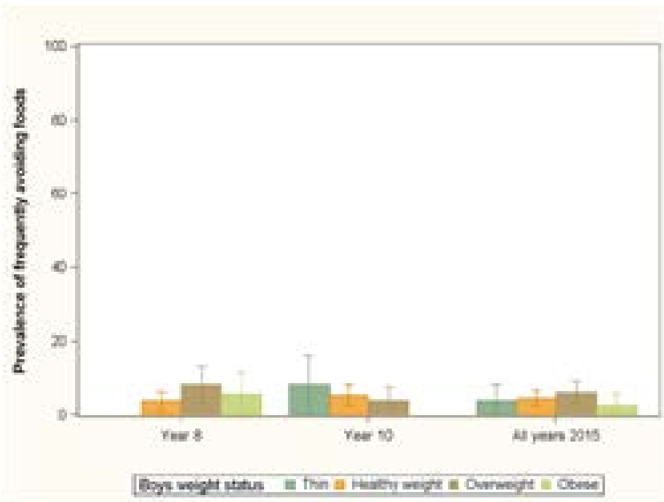

Prevalence of frequently avoiding foods
Year 8
Year 10
All years 2015
Girls SES Low Middle High


Prevalence of frequently avoiding foods
Year 8
Year 10
All years 2015
Boys SES Low Middle High


Prevalence of frequently avoiding foods
Year 8
Year 10
All years 2015
Girls cultural background English European Middle-Eastern Asian


Prevalence of frequently avoiding foods
Year 8
Year 10
All years 2015
Boys cultural background English European Middle-Eastern Asian


Prevalence of frequently avoiding foods
Year 8
Year 10
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Prevalence of frequently avoiding foods
Year 8
Year 10
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

BRUSHING TEETH

Plaque is a biofilm that coats teeth and can contribute to the development of dental caries and gum disease (gingivitis and periodontitis). The micro-organisms present in plaque are naturally present in the mouth, however failure to remove plaque through regular tooth brushing allows the plaque to build up which can lead to dental disease.[8, 17] The Australasian Academy of Paediatric Dentistry's oral hygiene recommendations are to brush teeth twice a day, in the morning and in the evening, for at least two minutes with fluoride toothpaste.[8] Establishing healthy tooth brushing behaviour during childhood is important because once established, tooth brushing habits persist through the life course.[18]

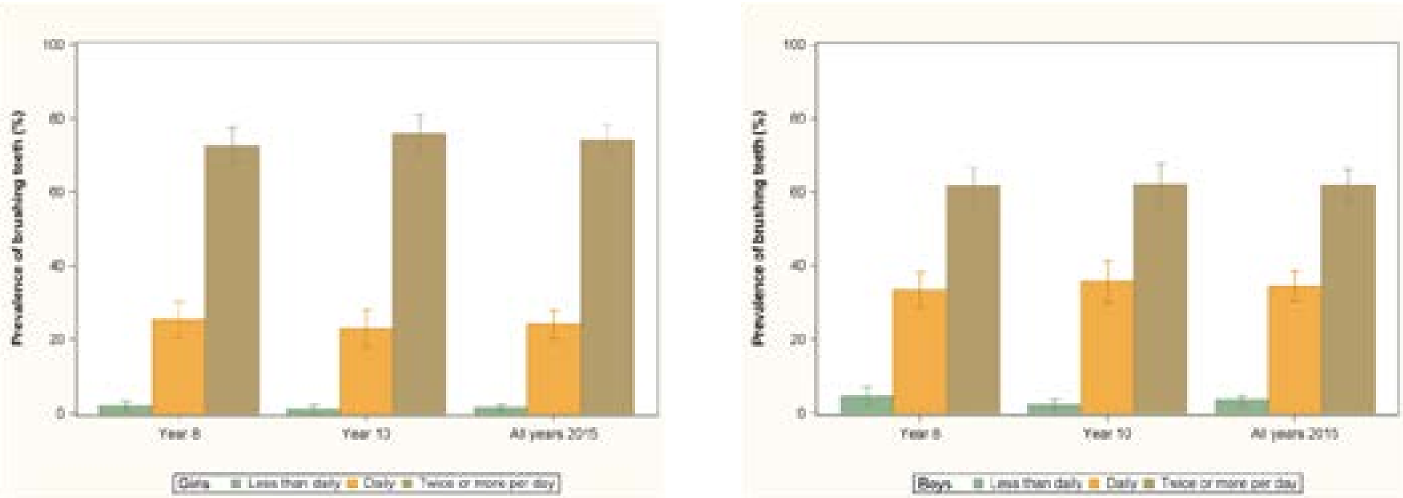
Table 7.16 and Figure 7.16 show the prevalence for the frequency of brushing teeth among adolescents by sex and year group in 2015. Overall, 68% of adolescents reported that they brush their teeth twice a day. The prevalence of brushing teeth twice a day appeared to be higher among girls (74%), compared with boys (62%).

Table 7.16 Prevalence of brushing teeth among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Less than daily	3.3 (0.6)	1.7 (0.4)	2.5 (0.3)
Daily	29.6 (1.8)	29.3 (2.1)	29.4 (1.7)
Two or more per day	67.1 (1.9)	69.0 (2.2)	68.0 (1.8)
GIRLS			
Less than daily	1.9 (0.6)	1.1 (0.5)	1.5 (0.4)
Daily	25.4 (2.5)	23.0 (2.6)	24.2 (2.0)
Two or more per day	72.7 (2.4)	75.9 (2.6)	74.3 (2.0)
BOYS			
Less than daily	4.8 (1.2)	2.4 (0.7)	3.6 (0.7)
Daily	33.6 (2.4)	35.7 (2.8)	34.6 (2.0)
Two or more per day	61.6 (2.5)	62.0 (2.9)	61.8 (2.2)

Note: No signifiance testing was conducted.

Figure 7.16 Prevalence of brushing teeth among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



BRUSHING TEETH TWICE A DAY

The national recommendation for children is to brush teeth twice a day.[8] Within the home setting, tooth brushing behaviour appeared to be closely linked to other routine activities that take place in the morning or evening.[19] An important factor for parents initiating tooth brushing habit in their children is the day-to-day stability of those morning and/or evening routines. For adolescents, there is some evidence that good tooth brushing habits are associated with higher educational achievements in later life.[22] Further, two factors appear to motivate adolescents' oral hygiene: health-related reasons to avoid dental problems and cosmetic-related reasons associated with appearance.[23]

Table 7.17 and Figure 7.17 show the prevalence of brushing teeth two or more times a day among adolescents by sex and year group in 2015. Overall 68% of adolescents brush their teeth two or more times a day and the prevalence was significantly higher among girls (74%), compared with boys (62%).

Figure 7.17 Prevalence of brushing teeth twice a day among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)

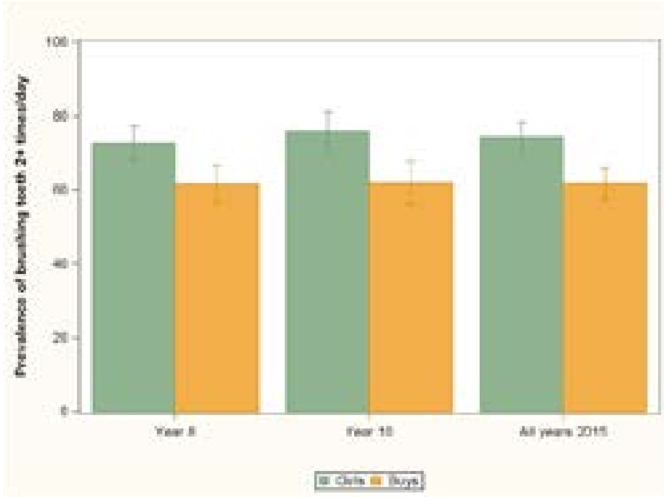


Table 7.17 Prevalence of brushing teeth twice a day among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	Year 10	All years
ALL			
Brushed twice a day	67.1 (1.9)	69.0 (2.2)	68.0 (1.8)
Brushed less than twice a day	32.9 (1.9)	31.0 (2.2)	32.0 (1.8)
GIRLS			
Brushed twice a day	**72.7 (2.4) a**	**75.9 (2.6) a**	**74.3 (2.0) a**
Brushed less than twice a day	27.3 (2.4)	24.1 (2.6)	25.7 (2.0)
BOYS			
Brushed twice a day	61.6 (2.5)	62.0 (2.9)	61.8 (2.2)
Brushed less than twice a day	38.4 (2.5)	38.0 (2.9)	38.2 (2.2)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately two in three (68%) adolescents in secondary school met the recommendations to brush teeth twice a day. Table 7.18 and Figure 7.18 show the prevalence of meeting the recommendation for brushing teeth among adolescents in 2015 stratified by sex, year group, socio-demographic characteristics, and BMI category.

Locality

2015: Overall, there were no significant differences in the prevalence of brushing teeth twice a day between adolescents from rural and urban areas.

Socio-economic status

2015: Overall, the prevalence of brushing teeth twice a day was significantly lower among adolescents from low SES (65%) and middle SES (65%) compared with adolescents from high SES (74%) backgrounds. The prevalence was significantly lower among girls from middle SES (72%) backgrounds, compared with girls from high SES (79%) backgrounds; and among boys from low SES (59%) and middle SES (59%) backgrounds, compared with boys from high SES (68%) backgrounds.

Cultural background

2015: Overall, the prevalence of brushing teeth twice a day was significantly higher among adolescents from Asian (79%) cultural backgrounds, compared with adolescents from English-speaking backgrounds (67%). The prevalence of brushing teeth twice a day was significantly higher among boys from Asian (75%) cultural backgrounds, compared with boys from English-speaking (61%) backgrounds.

Weight status

2015: Overall, the prevalence of brushing teeth twice a day was significantly lower among adolescents in the overweight BMI category (62%) and in the obese BMI category (52%), compared with adolescents in the healthy weight BMI category (71%). The prevalence was significantly lower among girls in the overweight BMI category (67%) and in the obese BMI category (54%), compared with girls in the healthy weight BMI category (78%); and among boys in the overweight BMI category (57%) and in the obese BMI category (49%), compared with boys in the healthy weight BMI category (64%).

Table 7.18 Prevalence of brushing teeth twice a day among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Locality			
Urban (ref)	67.2 (2.1)	70.9 (2.4)	69.1 (1.8)
Rural	66.8 (3.6)	63.7 (4.6)	65.3 (3.6)
SES			
Low	65.4 (3.8)	**64.9 (3.4) a**	**65.2 (3.1) a**
Middle	67.2 (2.7)	**62.8 (3.0) a**	**65.0 (2.2) a**
High (ref)	68.7 (3.0)	79.4 (2.9)	73.9 (2.2)
Cultural background			
English-speaking (ref)	66.3 (2.0)	67.8 (2.4)	67.0 (1.8)
European	64.3 (11.5)	85.1 (10.4)	75.1 (7.8)
Middle Eastern	56.7 (10.9)	65.8 (10.0)	61.0 (8.9)
Asian	**80.8 (5.0) a**	**77.3 (3.6) a**	**78.8 (2.9) a**
BMI category			
Thin	63.1 (5.9)	71.8 (6.2)	67.0 (3.9)
Healthy weight (ref)	70.4 (2.3)	72.4 (2.5)	71.4 (2.1)
Overweight	**60.0 (3.3) a**	**64.1 (3.7) a**	**62.0 (2.4) a**
Obese	61.6 (5.7)	**41.7 (8.6) a**	**51.5 (5.2) a**

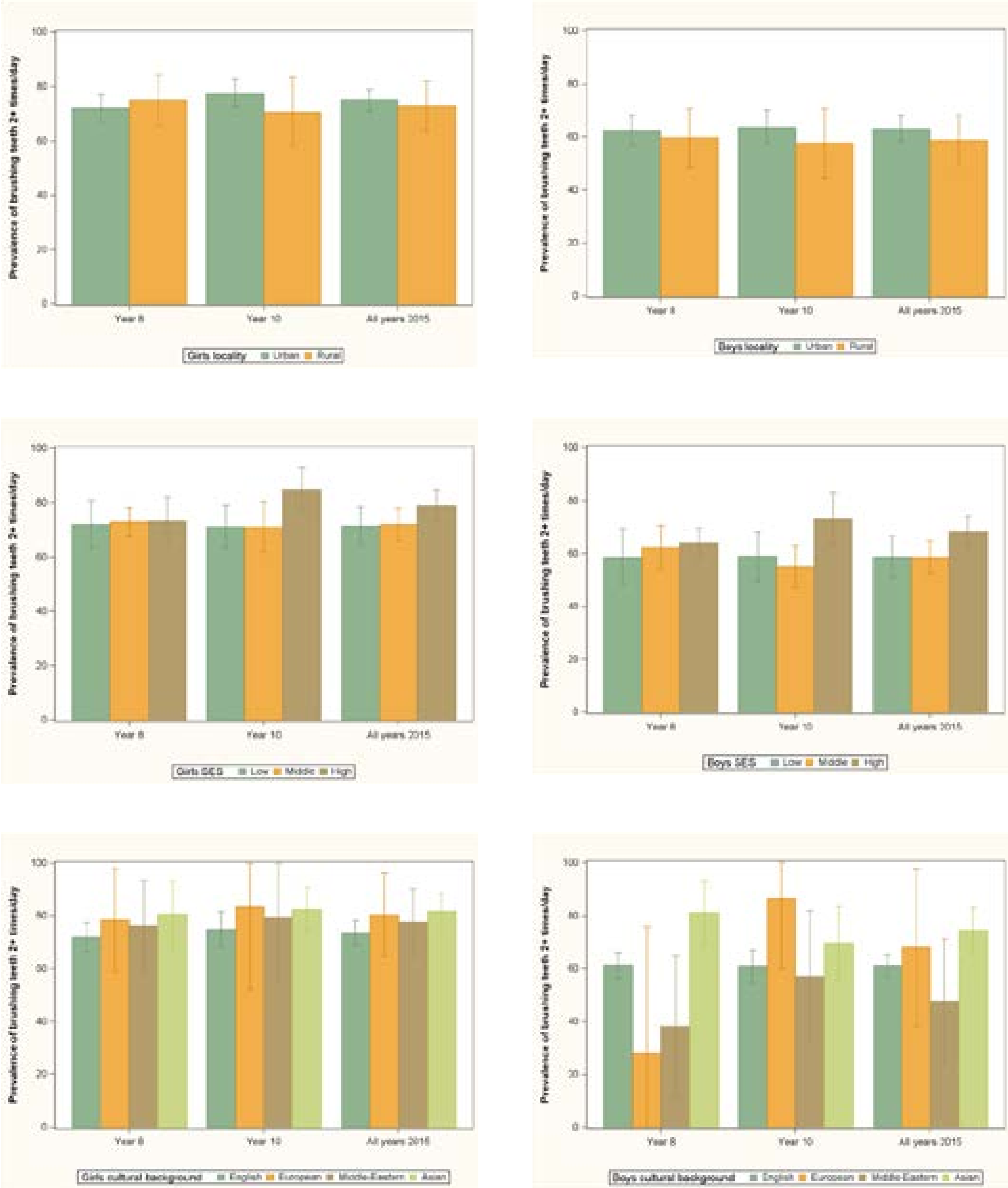
	2015		
	Year 8	Year 10	All years
GIRLS			
Locality			
Urban (ref)	72.0 (2.6)	77.6 (2.5)	74.9 (2.0)
Rural	74.8 (4.7)	70.6 (6.4)	72.7 (4.5)
SES			
Low	72.0 (4.3)	**71.2 (4.0) a**	71.5 (3.5)
Middle	73.0 (2.7)	**71.1 (4.6) a**	**72.0 (3.0) a**
High (ref)	73.3 (4.3)	84.8 (4.0)	79.1 (2.8)
Cultural background			
English-speaking (ref)	71.9 (2.8)	74.9 (3.3)	73.4 (2.4)
European	78.3 (9.6)	83.4 (15.6)	80.3 (7.8)
Middle Eastern	76.3 (8.6)	79.5 (11.8)	77.6 (6.2)
Asian	80.5 (6.4)	82.4 (4.2)	81.6 (3.3)
BMI category			
Thin	70.0 (6.2)	79.7 (7.4)	74.2 (4.6)
Healthy weight (ref)	76.4 (3.3)	80.2 (3.2)	78.4 (2.6)
Overweight	**65.1 (4.3) a**	69.1 (5.0)	**67.1 (3.1) a**
Obese	64.2 (7.9)	**43.0 (13.0) a**	**54.2 (6.2) a**
BOYS			
Locality			
Urban (ref)	62.4 (2.8)	63.7 (3.2)	63.1 (2.4)
Rural	59.7 (5.5)	57.6 (6.6)	58.6 (4.8)
SES			
Low	58.6 (5.3)	**59.0 (4.6) a**	**58.8 (3.9) a**
Middle	62.2 (4.1)	**54.9 (4.0) a**	**58.6 (3.1) a**
High (ref)	64.0 (2.7)	73.1 (4.9)	68.3 (2.9)
Cultural background			
English-speaking (ref)	61.1 (2.5)	60.8 (3.0)	61.0 (2.2)
European	27.9 (23.8)	86.4 (13.1)	68.0 (14.7)
Middle Eastern	38.1 (13.3)	56.8 (12.4)	47.6 (11.7)
Asian	**81.2 (5.9) a**	69.6 (6.8)	**74.5 (4.2) a**
BMI category			
Thin	55.9 (9.2)	65.0 (8.6)	60.2 (6.0)
Healthy weight (ref)	64.5 (2.6)	64.3 (3.1)	64.4 (2.4)
Overweight	**55.5 (5.0) a**	59.0 (5.0)	**57.2 (3.6) a**
Obese	58.5 (8.3)	**40.4 (10.1) a**	**48.7 (7.3) a**

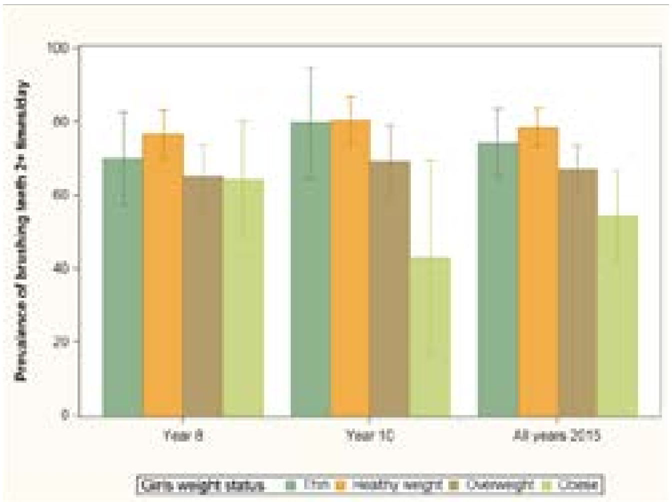
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

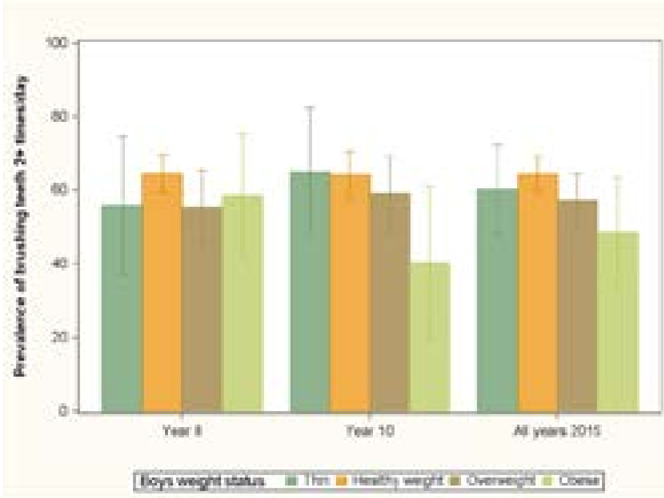
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 7.18 Prevalence of brushing teeth twice a day among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)




Prevalence of brushing teeth 2+ times/day
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of brushing teeth 2+ times/day
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

SUMMARY OF THE DENTAL HEALTH OF ADOLESCENTS IN SECONDARY SCHOOL

The table below summarises the prevalence of indicators of dental health in adolescents in secondary school.

Dental indicator	Australian Dental Association policy[21]	SPANS cut point	Prevalence (%) 2010	Prevalence (%) 2015	Significant subgroup findings for 2015* & change between 2010-2015
Toothache in the past 12 months	3.1 All children should begin regular dental examinations by the age of one year 3.2 All children from around seven years of age must have their oral health, including developing occlusion, periodically assessed by a dentist 3.3 The aim of governments in the provision of dental services to children should be to improve and maintain their dental health through preventive interventions and, for eligible children, also through provision of treatment 3.4 Dental treatment in the public sector should be targeted to disadvantaged children	Frequently (i.e., often or very often)	Not collected in 2010	3.6%	**2015:** Overall, there were no significant differences in the proportion of adolescents with a frequent toothache between adolescent sub-groups
Avoiding some foods because of tooth or mouth problems in the past 12 months		Frequently (i.e., often or very often)		4.7%	**2015:** Overall, the proportion of adolescents that frequently avoiding food because of problems with teeth or mouth during the past 12-months was significantly higher among adolescents from low and middle SES backgrounds
Brushing teeth	Brush teeth twice a day, in the morning and in the evening, for at least two minutes with fluoride toothpaste.[8]	≥2 times/day		68.0%	**2015:** Overall, the proportion of adolescents that brush teeth ≥2 times/day was significantly lower among adolescents from low and middle SES backgrounds; in the overweight and the obese BMI categories; and was significantly higher among adolescents from Asian cultural backgrounds

* *Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background and; thin, overweight and obese compared with healthy weight BMI category. n/a = not available*

n/a *not available.*

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CHAPTER 8: PHYSICAL ACTIVITY & HEALTH-RELATED FITNESS

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5-16 YEARS

19%
of children and adolescents met the daily physical activity recommendation

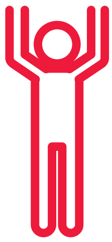
65%
of children and adolescents achieved the HFZ* for cardiorespiratory fitness (20 metre shuttle run test)

2015

- **19% of children and adolescents met the daily physical activity recommendation**
  - Girls were less likely to meet the physical activity recommendation (15%), compared with boys (24%)
  - Children and adolescents from rural areas were more likely to meet the physical activity recommendation (22%), compared with children and adolescents from urban areas (18%)
  - Children and adolescents from Middle Eastern (13%) and Asian cultural backgrounds (9%) were less likely to meet the physical activity recommendation, compared with children and adolescents from English-speaking backgrounds (20%)
  - Children and adolescents in the overweight (14%) and obese (15%) BMI categories were less likely to meet the physical activity recommendation, compared with children and adolescents in the healthy weight BMI category (21%)
- **65% of children and adolescents achieved the HFZ* for cardiorespiratory fitness (20 metre shuttle run test)**
  - Children and adolescents from low SES backgrounds were less likely to achieve the HFZ for cardiorespiratory fitness (50%), compared with children and adolescents from high SES backgrounds (67%)
  - Children and adolescents from Middle Eastern (40%) and Asian (44%) cultural backgrounds were less likely to achieve the HFZ for cardiorespiratory fitness, compared with children and adolescents from English-speaking backgrounds (63%)
  - Children and adolescents in the overweight (40%) and obese (16%) BMI categories were less likely to achieve the HFZ for cardiorespiratory fitness, compared with children and adolescents in the healthy weight BMI category (71%)

* *HFZ: Healthy Fitness Zone*

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5-16 YEARS



36%
of children and adolescents achieved the HFZ for muscular fitness (standing broad jump)

- **36% of children and adolescents achieved the HFZ for muscular fitness (standing broad jump)**
  - Children and adolescents from low SES (29%) and middle SES backgrounds (35%) backgrounds were less likely to achieve the HFZ for muscular fitness, compared with children and adolescents from high SES backgrounds (42%)
  - Children and adolescents from Middle Eastern (23%) and Asian (31%) cultural backgrounds were less likely to achieve the HFZ for muscular fitness, compared with children and adolescents from English-speaking backgrounds (37%)
  - Children and adolescents in the overweight (23%) and obese (15%) BMI categories were less likely to achieve the HFZ for muscular fitness, compared with children and adolescents in the healthy weight BMI category (42%)

SIGNIFICANT CHANGES BETWEEN 2010-2015

- **The proportion of girls achieving the HFZ for cardiorespiratory fitness has significantly declined from 68% in 2010 to 61% in 2015**
- **The proportion of children and adolescents achieving the HFZ for cardiorespiratory fitness has significantly declined among children and adolescents from**
  - High SES backgrounds (from 75% in 2010 to 67% in 2015)
  - Asian cultural backgrounds (from 59% in 2010 to 44% in 2015)
  - Overweight BMI category (from 49% in 2010 to 40% in 2015)

CONTEXT

The public health rationale for promoting physical activity is compelling. Physical activity is associated with a wide range of health, social, economic, and environmental benefits.[1] Importantly, physical activity is beneficial across the lifespan, providing health benefits from infancy to old age. Important health benefits of physical activity during childhood and adolescence include favourable skeletal development, improved metabolic profile and psychological wellbeing, and an increased likelihood of physical activity later in adulthood.[1-3]

Physical activity is a *behaviour* and defined as any bodily movement of large muscle groups while physical fitness is a *physiological attribute* which allows individuals to achieve certain performance standards for physical activity.[4] Physical activity and fitness are therefore closely related – more time spent in health-enhancing levels of physical activity will improve health-related physical fitness.

This chapter reports on the proportion of children sampled who meet the daily recommendation for physical activity and who demonstrated adequate cardio-metabolic endurance and musculoskeletal fitness, stratified by year group, sex and, where appropriate, by socio-demographic characteristics and BMI category. Where available the 2010 prevalence estimates are included for comparison. The findings are presented separately for children in primary school and adolescents in secondary school. The prevalence (%) estimates need to be interpreted in conjunction with their standard errors (SE); a large standard error means a less precise estimate.

PRIMARY SCHOOL

A methodological factor to consider in the interpretation of the findings on children in primary school is the difference in respondent. Parents reported on behalf of their children in Years K, 2 and 4, while children in Year 6 self-reported. Therefore, any differences in the reported prevalence of indicators of physical activity between children in Years K, 2 and 4 and children in Year 6 may be a result of these differences in data collection methods.

PHYSICAL ACTIVITY

Physical activities are generally classified as 'low', 'moderate', or 'vigorous' intensity on the basis of energy expenditure measured in metabolic equivalents (METs).[5] (METs are the ratio of activity to resting energy expenditure). Health benefits accrue from spending bouts of at least 10 minutes in physical activities that are at least of a moderate intensity, which for children has been defined as MET ≥3.0 or 4.0.[1,5]

Australia's national guidelines for young children's physical activity[6] recommend, for health benefits, that children age 5-12 years should:

1. *Accumulate at least 60 minutes of moderate to vigorous intensity physical activity (MVPA) every day*
2. *Include a variety of aerobic activities, including some vigorous intensity activity*
3. *On at least three days per week, children should engage in activities that strengthen muscle and bone*
4. *Engage in more activity – up to several hours per day to achieve additional health benefits*

In previous SPANS, physical activity participation of children in Years K, 2 and Year 4 was measured (proxy report by parents) using a reliable, but not validated question developed by the NSW Ministry of Health,[7] and in Year 6 (child self-report) was measured using the valid and reliable Adolescent Physical Activity Recall Questionnaire (APARQ).[8] Both questions have been replaced in 2015 with a one item, validated question endorsed by the Australian Healthy Kids Alliance as the primary indicator for population monitoring surveys of children's physical activity.[9] The question asks respondents to report, *"Over the past 7 days, on how many days were you/was your child engaged in moderate to vigorous physical activity for at least 60 minutes (this can be accumulated over the entire day, for example in 10-minute intervals) each day?"* Response categories were 0 to 7 days; with a response of 7 days indicating meeting of the physical activity recommendations.

DAYS SPENT IN PHYSICAL ACTIVITY

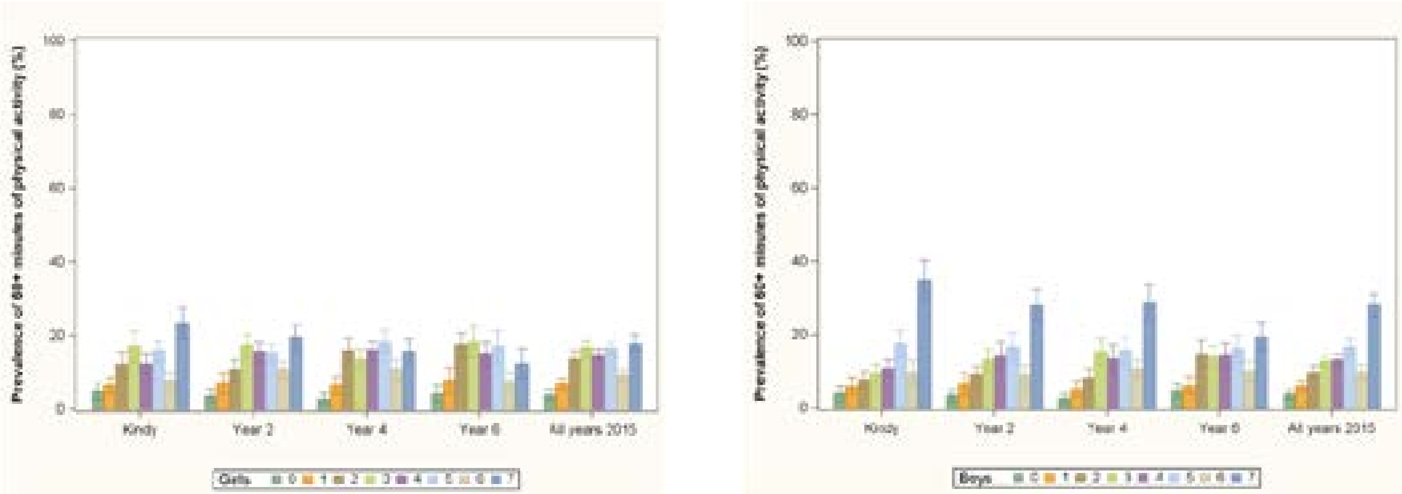
Table 8.1 and Figure 8.1 show the prevalence of days spent in moderate to vigorous physical activity (MVPA) for at least 60 minutes each day among children by sex and year group in 2015. Overall, 23% of children met the daily physical activity recommendation (i.e., 7 days) and 4% of children did not achieve 60 minutes of MVPA on any days. Overall, there appear to be differences between the number of days that girls and boys engaged in at least 60 minutes of MVPA with girls spending on average 4.1 days (SD=2.0) and boys 4.6 days (SD=2.1) with at least 60 minutes of MVPA per week. A higher proportion of girls engaged in MVPA for at least 60 minutes on 1 to 5 days compared with boys, and a higher proportion of boys reported being physically active for at least 60 minutes on 6 to 7 days, compared with girls. The proportion of girls meeting the recommendation appeared to be lower than the proportion of boys, and there appeared to be a decline in the proportion of children meeting the recommendation with increasing age.

Table 8.1 Prevalence of days spent in at least 60 minutes of MVPA among children in primary school by sex and year group in 2015 (%, SE)

DAYS	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
0 days	4.5 (0.9)	3.5 (0.7)	2.8 (0.6)	4.5 (0.7)	3.8 (0.5)
1 day	6.2 (0.9)	6.8 (1.1)	5.9 (0.9)	7.0 (0.9)	6.5 (0.6)
2 days	9.9 (1.1)	10.0 (1.0)	12.1 (1.2)	16.2 (1.2)	11.9 (0.7)
3 days	13.2 (1.1)	15.3 (1.0)	14.5 (1.1)	16.2 (1.3)	14.7 (0.7)
4 days	11.6 (0.9)	15.0 (1.2)	14.7 (1.2)	14.8 (1.4)	13.9 (0.6)
5 days	16.7 (1.2)	15.9 (1.2)	17.1 (1.0)	16.5 (1.5)	16.6 (0.8)
6 days	8.8 (1.0)	9.9 (1.0)	10.8 (1.0)	8.9 (0.9)	9.6 (0.7)
7 days	29.1 (1.9)	23.6 (1.5)	22.1 (1.6)	15.9 (1.3)	23.0 (1.1)
GIRLS					
0 days	5.0 (1.1)	3.7 (0.8)	2.9 (0.8)	4.3 (1.1)	4.0 (0.7)
1 day	6.5 (1.0)	7.1 (1.4)	6.5 (1.2)	7.8 (1.7)	6.9 (0.8)
2 days	12.2 (1.6)	10.7 (1.4)	15.9 (1.7)	17.5 (1.6)	13.9 (0.9)
3 days	17.0 (2.0)	17.3 (1.5)	13.7 (1.3)	18.4 (2.0)	16.6 (1.1)
4 days	12.3 (1.4)	15.6 (1.3)	16.0 (1.2)	15.1 (1.6)	14.7 (0.8)
5 days	15.9 (1.3)	15.2 (1.3)	18.4 (1.5)	16.8 (2.2)	16.5 (0.8)
6 days	7.8 (1.0)	10.8 (1.2)	10.8 (1.4)	7.7 (1.2)	9.3 (0.7)
7 days	23.4 (2.0)	19.6 (1.7)	15.6 (1.8)	12.5 (1.9)	18.0 (1.1)
BOYS					
0 days	4.0 (1.0)	3.4 (0.9)	2.6 (0.7)	4.8 (1.0)	3.7 (0.6)
1 day	5.9 (1.2)	6.6 (1.6)	5.2 (1.0)	6.1 (1.1)	6.0 (0.7)
2 days	7.6 (1.3)	9.1 (1.1)	8.1 (1.4)	14.8 (1.8)	9.8 (0.9)
3 days	9.5 (1.2)	13.2 (1.4)	15.3 (1.7)	13.9 (1.5)	12.8 (0.7)
4 days	10.8 (1.2)	14.3 (1.8)	13.4 (1.9)	14.5 (1.6)	13.2 (0.8)
5 days	17.5 (1.9)	16.6 (2.0)	15.8 (1.7)	16.2 (1.9)	16.6 (1.1)
6 days	9.8 (1.6)	8.9 (1.4)	10.7 (1.2)	10.2 (1.3)	9.9 (0.9)
7 days	34.9 (2.7)	28.0 (2.2)	28.8 (2.4)	19.4 (1.8)	28.1 (1.5)

Note: No significance testing was conducted.

Figure 8.1 Prevalence of days spent in at least 60 minutes of MVPA among children in primary school by sex and year group in 2015 (%, 95%CI)



MEETING THE PHYSICAL ACTIVITY RECOMMENDATION

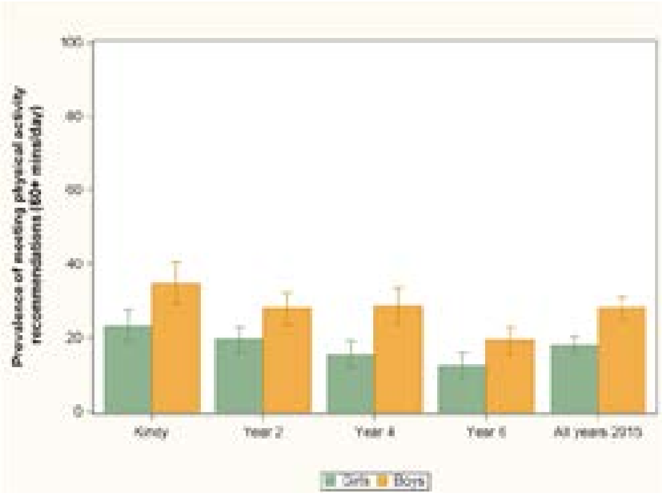
Table 8.2 and Figure 8.2 show the prevalence of meeting the daily physical activity recommendation in children by sex and year group in 2015. Overall, 23% of children met the recommendation, and the prevalence of meeting the recommendation was significantly lower among girls (18%) compared with boys (28%).

Table 8.2 Prevalence of meeting the physical activity recommendation among primary school children by sex and year group in 2015 (%, SE)

	2015				
	Year K	**Year 2**	**Year 4**	**Year 6**	**All years**
ALL					
Met physical activity recommendation	29.1 (1.9)	23.6 (1.5)	22.1 (1.6)	15.9 (1.3)	23.0 (1.1)
Did not meet physical activity recommendation	70.9 (1.9)	76.4 (1.5)	77.9 (1.6)	84.1 (1.3)	77.0 (1.1)
GIRLS					
Met physical activity recommendation	**23.4 (2.0) a**	**19.6 (1.7) a**	**15.6 (1.8) a**	**12.5 (1.9) a**	**18.0 (1.1) a**
Did not meet physical activity recommendation	76.6 (2.0)	80.4 (1.7)	84.4 (1.8)	87.5 (1.9)	82.0 (1.1)
BOYS					
Met physical activity recommendation	34.9 (2.7)	28.0 (2.2)	28.8 (2.4)	19.4 (1.8)	28.1 (1.5)
Did not meet physical activity recommendation	65.1 (2.7)	72.0 (2.2)	71.2 (2.4)	80.6 (1.8)	71.9 (1.5)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 8.2 Prevalence of meeting the physical activity recommendation among primary school children by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately one in four (23%) children met the physical activity recommendation of at least 60 minutes of MVPA daily. Table 8.3 and Figure 8.3 show the prevalence of meeting the physical activity recommendation among children by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, the prevalence of meeting the physical activity recommendation was significantly higher among children from rural areas (28%) compared with children from urban areas (22%). The prevalence was significantly higher among rural girls (22%) compared with urban girls (17%), and among rural boys (34%) compared with urban boys (27%).

Socio-economic status

2015: Overall, there were no significant differences in meeting the physical activity recommendation between children from different SES backgrounds.

Cultural background

2015: Overall, the prevalence of meeting the physical activity recommendation was significantly lower among children from Asian (11%) and Middle Eastern (14%) cultural backgrounds, compared with children from English-speaking backgrounds (24%). The prevalence was significantly lower among girls from Asian (9%) and Middle Eastern (11%) cultural backgrounds, compared with girls from English-speaking backgrounds (19%); and among boys from Asian (15%) and Middle Eastern (17%) cultural backgrounds, compared with boys from English-speaking backgrounds (30%).

Weight status

2015: Overall, the prevalence of meeting the physical activity recommendation was significantly lower among children in the overweight (17%) and obese (16%) BMI categories, compared with children in the healthy weight BMI category (25%). The prevalence was significantly lower among boys in the overweight (19%) and obese (20%) BMI categories, compared with boys in the healthy weight BMI category (30%).

Table 8.3 Prevalence of meeting the physical activity recommendation among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015				
	Year K	Year 2	Year 4	Year 6	All years
ALL					
Locality					
Urban (ref)	28.0 (2.3)	21.7 (1.6)	20.2 (1.7)	15.1 (1.5)	21.6 (1.3)
Rural	33.7 (2.6)	**31.0 (1.6) a**	**28.3 (3.2) a**	**18.8 (1.5) a**	**28.0 (1.1) a**
SES					
Low	21.3 (3.7)	21.7 (2.5)	21.7 (4.7)	11.0 (2.1)	19.1 (2.6)
Middle	35.2 (3.3)	26.6 (2.4)	21.9 (2.5)	19.3 (1.9)	25.8 (1.3)
High (ref)	28.4 (2.5)	22.1 (2.1)	22.5 (2.1)	15.3 (1.7)	22.7 (1.6)
Cultural background					
English-speaking (ref)	31.1 (1.9)	25.3 (1.6)	23.5 (1.6)	16.6 (1.3)	24.4 (1.0)
European	26.3 (10.7)	24.5 (7.9)	35.2 (12.4)	12.3 (7.4)	23.8 (4.7)
Middle Eastern	**20.5 (4.8) a**	**9.3 (4.0) a**	**10.6 (1.7) a**	15.5 (5.8)	**13.8 (1.9) a**
Asian	**15.7 (4.1) a**	**7.8 (2.7) a**	**10.5 (2.9) a**	**8.2 (3.4) a**	**11.4 (2.0) a**
BMI category					
Thin	28.2 (5.7)	27.5 (4.9)	26.7 (6.4)	12.2 (4.2)	23.7 (2.9)
Healthy weight (ref)	30.0 (2.0)	25.1 (1.9)	24.7 (1.9)	17.5 (1.7)	24.7 (1.3)
Overweight	24.6 (4.1)	19.8 (3.1)	**13.6 (2.1) a**	14.1 (2.0)	**17.3 (1.4) a**
Obese	24.2 (6.5)	**14.8 (3.8) a**	**14.4 (3.4) a**	8.9 (3.7)	**15.6 (2.6) a**
GIRLS					
Locality					
Urban (ref)	22.4 (2.5)	17.9 (1.9)	14.3 (2.1)	12.0 (2.1)	17.0 (1.3)
Rural	27.2 (3.4)	**26.8 (3.0) a**	20.1 (2.9)	14.2 (3.5)	**22.1 (1.3) a**
SES					
Low	16.4 (4.4)	**26.0 (4.6) a**	16.7 (3.8)	6.8 (2.4)	16.6 (2.1)
Middle	**30.1 (2.9) a**	**22.1 (3.2) a**	13.2 (2.4)	16.2 (3.2)	20.4 (1.2)
High (ref)	21.8 (2.7)	15.2 (1.9)	17.2 (2.8)	12.0 (2.7)	16.8 (1.7)
Cultural background					
English-speaking (ref)	24.8 (2.0)	20.8 (1.8)	17.1 (1.9)	13.0 (1.9)	19.1 (1.1)
European	32.4 (15.6)	43.2 (16.2)	20.8 (10.4)	13.0 (10.0)	27.8 (6.9)
Middle Eastern	19.0 (7.9)	**6.1 (3.8) a**	8.9 (4.3)	11.0 (5.4)	**11.2 (3.1) a**
Asian	15.1 (5.5)	**6.9 (3.3) a**	**2.1 (2.0) a**	5.6 (4.1)	**8.9 (2.7) a**
BMI category					
Thin	25.6 (6.8)	21.0 (8.3)	18.4 (6.3)	8.6 (3.9)	17.8 (3.1)
Healthy weight (ref)	24.7 (2.3)	21.0 (2.3)	17.0 (2.0)	12.6 (2.4)	19.2 (1.4)
Overweight	20.1 (5.6)	16.2 (3.3)	11.4 (2.7)	17.2 (3.9)	15.9 (2.1)
Obese	16.8 (9.3)	11.9 (4.8)	13.2 (4.2)	4.4 (2.8)	11.9 (3.8)

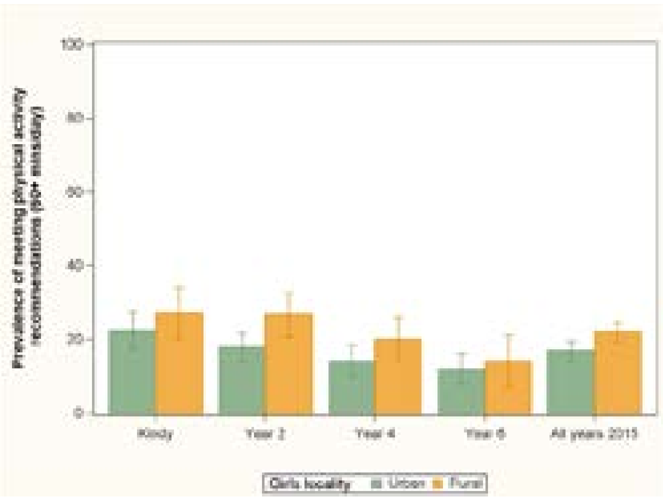
	2015				
	Year K	**Year 2**	**Year 4**	**Year 6**	**All years**
BOYS					
Locality					
Urban (ref)	33.6 (3.2)	26.1 (2.6)	26.4 (2.5)	18.3 (2.3)	26.5 (1.8)
Rural	40.2 (4.5)	**34.8 (3.6) a**	36.3 (5.2)	22.9 (2.6)	**33.6 (1.6) a**
SES					
Low	26.6 (5.8)	**17.9 (3.3) a**	26.3 (6.1)	15.0 (3.7)	21.5 (3.7)
Middle	40.5 (5.6)	31.5 (2.7)	31.8 (4.6)	22.1 (3.0)	31.3 (1.9)
High (ref)	34.7 (3.6)	30.5 (3.5)	27.9 (3.1)	19.1 (2.7)	28.9 (2.2)
Cultural background					
English-speaking (ref)	37.1 (2.8)	30.1 (2.3)	30.0 (2.5)	20.3 (1.9)	29.8 (1.4)
European	15.9 (15.5)	**10.8 (6.5) a**	49.7 (20.5)	11.2 (10.1)	19.2 (6.3)
Middle Eastern	22.2 (9.1)	**12.8 (5.4) a**	**12.6 (5.4) a**	19.7 (9.7)	**16.7 (2.9) a**
Asian	**16.8 (7.5) a**	**9.1 (5.8) a**	22.2 (5.6)	10.8 (4.4)	**15.0 (3.2) a**
BMI category					
Thin	30.9 (8.3)	35.4 (8.2)	35.2 (8.7)	20.4 (10.4)	31.4 (3.7)
Healthy weight (ref)	35.0 (3.2)	29.5 (2.8)	32.5 (2.9)	22.5 (2.4)	30.3 (1.8)
Overweight	30.3 (5.7)	24.6 (5.3)	**15.9 (3.9) a**	**11.8 (2.2) a**	**18.7 (2.0) a**
Obese	33.9 (8.4)	17.9 (6.5)	**15.8 (5.2) a**	13.6 (5.9)	**19.6 (3.4) a**

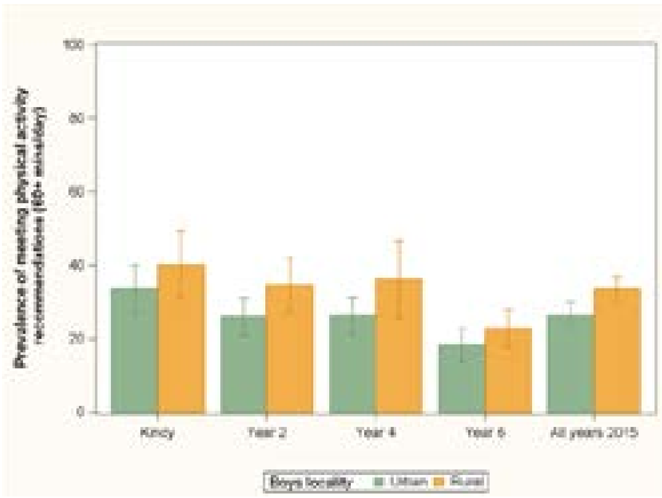
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

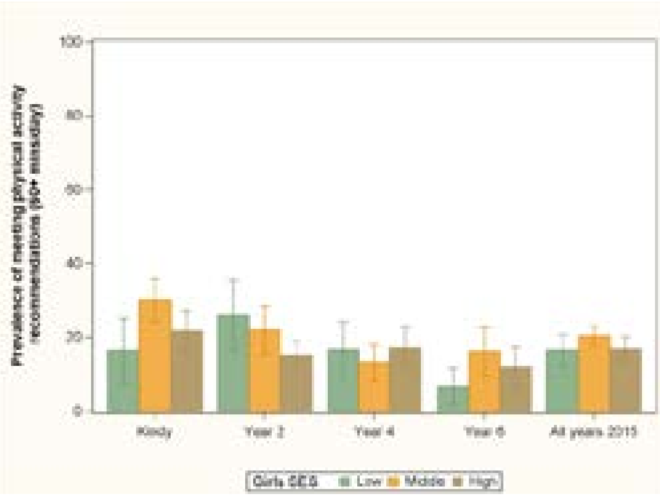
na *Indicates statistical significance could not be calculated due to low numbers*

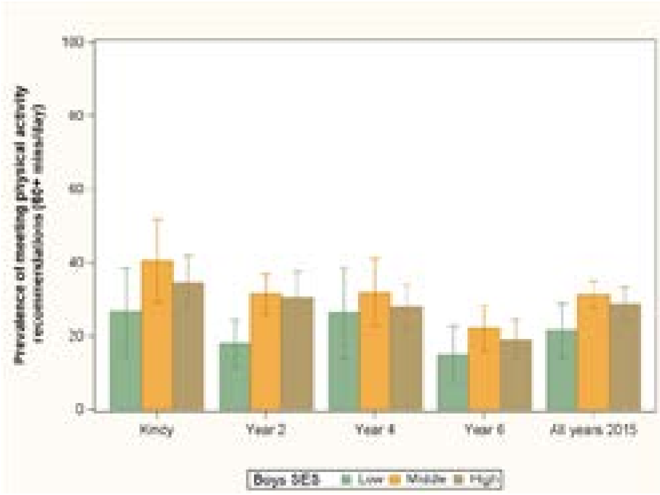
No letter means there was no statistical difference.

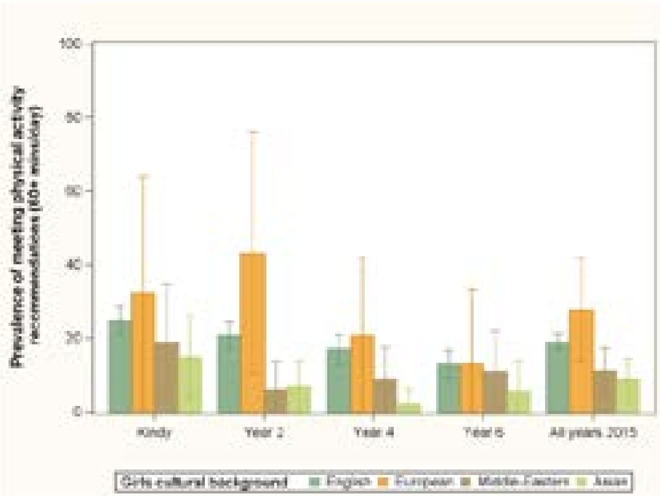
Figure 8.3 Prevalence of meeting the physical activity recommendation among children in primary school by sex, year group, sociodemographic characteristics and BMI category in 2015 (%, 95%CI)

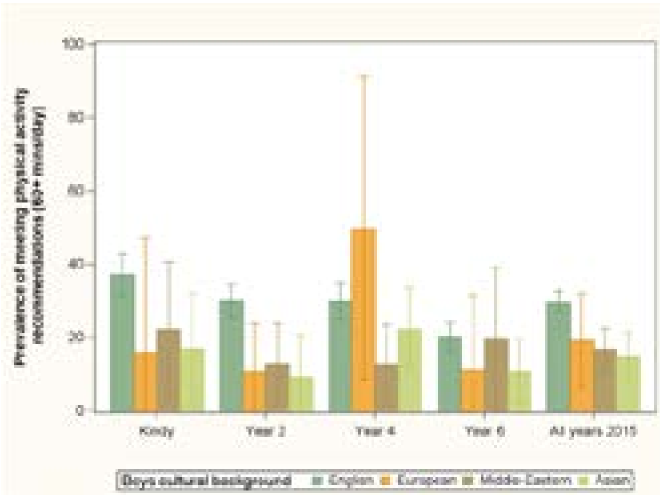


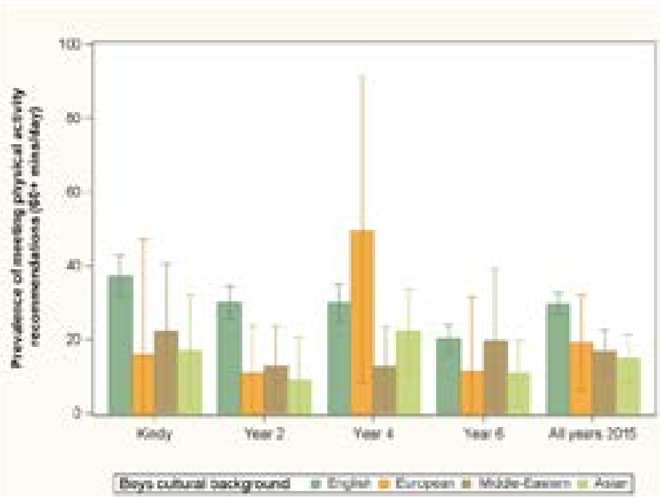


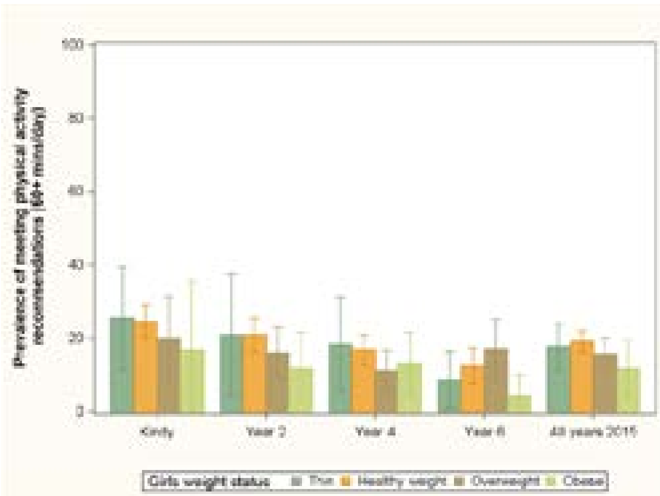

Prevalence of meeting physical activity recommendations (60+ mins/day)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls SES
Low
Middle
High


Prevalence of meeting physical activity recommendations (60+ mins/day)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys SES
Low
Middle
High


Prevalence of meeting physical activity recommendations (60+ mins/day)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting physical activity recommendations (60+ mins/day)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting physical activity recommendations (60+ mins/day)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting physical activity recommendations (60+ mins/day)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese

AWARNESS OF NATIONAL CHILDREN'S PHYSICAL ACTIVITY RECOMMENDATION

In 2004, the Commonwealth Department of Health and Aging released Australia's first physical activity recommendation for children. In 2012, the recommendations were updated by the Guideline Development Committee, which recommended the guidelines be updated every five years. The 2012 review recommended the same physical activity prescription (i.e., at least 60 minutes daily of moderate to vigorous physical (MVPA) activity), but separated the recommendation to reflect the two developmental stages of childhood (5-12 year olds[10]), and adolescence (13-18 year olds[11]), and rebranded the guidelines as '*Make your move – Sit less - Be active for Life*'.

Parent and child awareness and knowledge of the physical activity recommendation were determined by asking '*How many minutes of physical activity are recommended for young people to participate in each day?*' The response was open-ended and included a 'Don't know' option.

The following findings present the proportion of parents of children in Years K, 2 and 4 and the proportion of children in Year 6 who correctly reported 60 minutes per day, and the proportion who reported '*Don't know*'. The prevalence of '*correctly reporting the physical activity recommendation*' and the prevalence of '*Don't know*' will indicate the reach that public health promotion campaigns have in the broader population.

Table 8.4 and Figure 8.4 show the prevalence of correctly stating the daily physical activity recommendation (i.e., 60 minutes) among parents of children in Years K, 2 and 4 and among children in Year 6, by sex and year group in 2015, and in 2010 for comparison. Any duration mentioned other than 60 minutes was classified as incorrect. Overall 17% of respondents correctly reported 60 minutes per day. Almost one-third (27%) of parents of children in Years K, 2 and 4 and 13% of children in Year 6 correctly reported the physical activity recommendation.

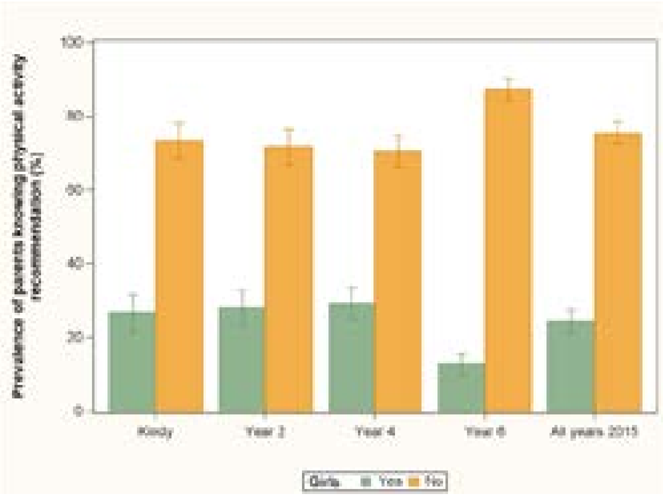
The prevalence of knowing the correct recommendation was significantly lower among parents of girls/girls (25%) compared with parents of boys/boys (29%). The prevalence of reporting the correct physical activity recommendation significantly increased from 17% in 2010 to 27% in 2015. The prevalence significantly increased among girls, from 16% in 2010 to 25% in 2015; and among boys, from 18% in 2010 to 29% in 2015.

Table 8.4 Prevalence of correctly reporting the physical activity recommendation for primary school children's physical activity by year and sex in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Correctly reported 60 minutes	29.9 (1.9)	32.2 (2.1)	29.8 (1.8)	13.4 (1.4)	26.6 (1.3)	**17.3 (1.0) b**
Did not report 60 minutes	70.1 (1.9)	67.8 (2.1)	70.2 (1.8)	86.6 (1.4)	73.4 (1.3)	82.7 (1.0)
GIRLS						
Correctly reported 60 minutes	**26.7 (2.5) a**	**28.2 (2.3) a**	29.3 (2.1)	12.7 (1.5)	**24.5 (1.5) a**	**16.2 (1.1) b**
Did not report 60 minutes	73.3 (2.5)	71.8 (2.3)	70.7 (2.1)	87.3 (1.5)	75.5 (1.5)	83.8 (1.1)
BOYS						
Correctly reported 60 minutes	33.2 (2.3)	36.6 (2.9)	30.3 (2.1)	14.1 (1.8)	28.7 (1.5)	**18.3 (1.2) b**
Did not report 60 minutes	66.8 (2.3)	63.4 (2.9)	69.7 (2.1)	85.9 (1.8)	71.3 (1.5)	81.7 (1.2)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 8.4 Prevalence of correctly reporting the physical activity recommendation for children by year and sex in 2015 (%, 95%CI)



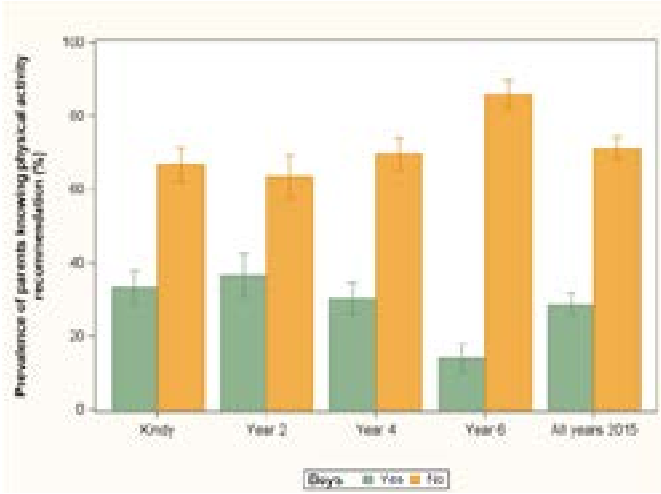


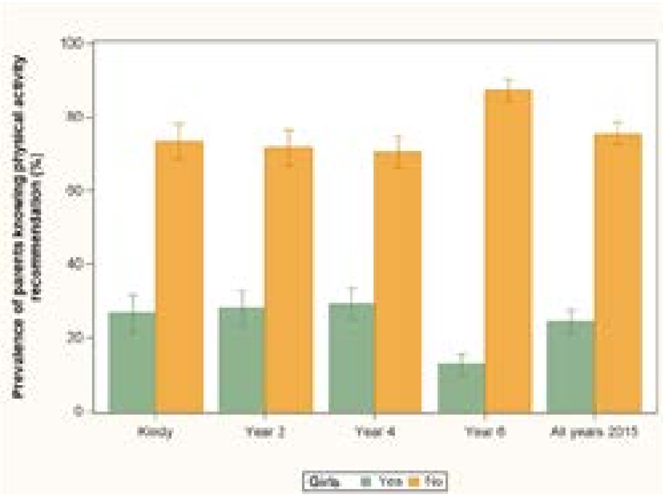
Table 8.5 and Figure 8.5 show the prevalence of not knowing the physical activity recommendation, by sex and year group in 2015, and 2010 for comparison. Overall, 47% of respondents did not know the daily physical activity recommendation. The prevalence was significantly higher among girls (48%) compared with boys (45%). Overall, the prevalence has significantly increased among children, from 37% in 2010 to 47% in 2015; among girls, from 39% in 2010 to 48% in 2015; and among boys, from 36% in 2010 to 45% in 2015.

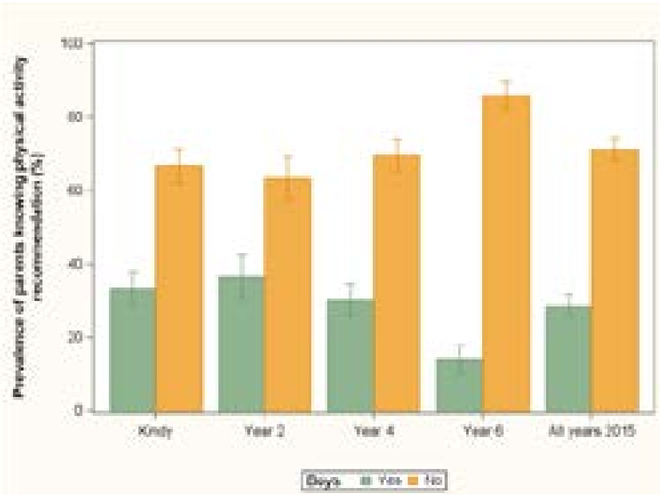
Table 8.5 Prevalence of not knowing the physical activity recommendation for primary school children by year and sex in 2015 and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Did not know the recommendation	47.7 (1.9)	42.3 (1.9)	40.5 (1.7)	55.9 (2.2)	46.5 (1.1)	**37.4 (0.9) b**
GIRLS						
Did not know the recommendation	50.0 (2.8)	**46.1 (2.3) a**	41.8 (2.2)	55.1 (2.8)	**48.2 (1.5) a**	**38.7 (1.1) b**
BOYS						
Did not know the recommendation	45.4 (2.0)	38.2 (2.4)	39.1 (2.4)	56.6 (2.8)	44.8 (1.3)	**36.2 (1.1) b**

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 8.5 Prevalence of stating 'I don't know' the physical activity recommendation for primary school children by year and sex in 2015 (%, 95%CI)





INDICATORS OF HEALTH-RELATED PHYSICAL FITNESS

Health-related physical fitness refers to components of fitness that have a relationship with health and include cardiorespiratory fitness and musculoskeletal fitness.[12] In school-based surveys, health-related physical fitness can be objectively measured using validated field-based tests, which are low in cost, have minimal equipment requirements and which can be administered to large groups. Cardiorespiratory fitness was assessed in primary school children in Years 4 and 6, and muscular fitness was assessed in children in Years 2, 4 and 6.

CARDIORESPIRATORY FITNESS

Cardiorespiratory fitness, or aerobic fitness, or maximal aerobic power (VO_{2max}), is the ability of the circulatory and respiratory systems to supply oxygen to skeletal muscles during sustained physical activity. Cardiorespiratory fitness is in part genetically determined, but it can be greatly influenced by environmental and behavioural factors.[13] Cardiorespiratory fitness is considered a physiological state, not a behaviour, and can be conceptualised as an attribute of physical activity.[4]

There are good reasons why children need to develop and maintain cardiorespiratory fitness. A fit child is more likely to be a fit adolescent[14] and there is some evidence that aerobic fitness tracks from childhood into adulthood.[15, 16] Further, there is emerging evidence that suggests cardiorespiratory fitness is positively related to academic performance (mathematics, reading and overall performance) in children.[17, 18]

The most common and practical field-based fitness test of cardiorespiratory endurance is the 20 metre shuttle run test (20MSRT) which is sometimes referred to as the ‘beep’ or ‘PACER’ test. The 20MSRT is a standardised, health-related, criterion-referenced test which assesses the minimum level of cardiorespiratory fitness that protects against the diseases that result from inactivity or sedentary living.[19] Briefly, the 20MSRT requires students to run a 20 metre distance at progressively faster speeds (i.e., increments at 0.5 km/hr each minute), until they reach volitional fatigue. The number of laps completed provides an estimate of aerobic capacity (VO_{2max})[20] and is considered by the World Health Organization as the single best field test indicator of cardiorespiratory fitness.[21]

For SPANS, cardiorespiratory fitness was assessed among children in Years 4 and 6 using the 20MSRT. The level and shuttle attained by each child were converted to the number of laps completed. The number of laps was used to categorise children in the ‘healthy fitness zone’ (HFZ) or ‘needs improvement zone’ (NIZ) according to the age- and sex-adjusted, criterion-referenced standards developed by the Cooper Institute for Aerobics Research.[19] As children age, they need to be able to run more laps in order to achieve the HFZ in aerobic capacity and because boys tend to have greater muscle mass, they need to complete more laps than girls of the same age. For example, in Year 6 boys must complete 23 laps to achieve the HFZ for cardiorespiratory fitness while girls need to complete 15 laps.

Although the criterion-referenced standards for the 20MSRT start from age 10 years, three-quarters (74.1%) of Year 4 students were age 9 years and were included in the analysis using the cut-points for 10-year-olds. Approximately one-fifth (22.5%) of children in Year 4 were age less than 9 years and were excluded from the analysis. This section reports the prevalence of achieving the HFZ for cardiorespiratory fitness among Year 4 and Year 6 children in primary school, by sex and year group in 2015, and in 2010 for comparison.

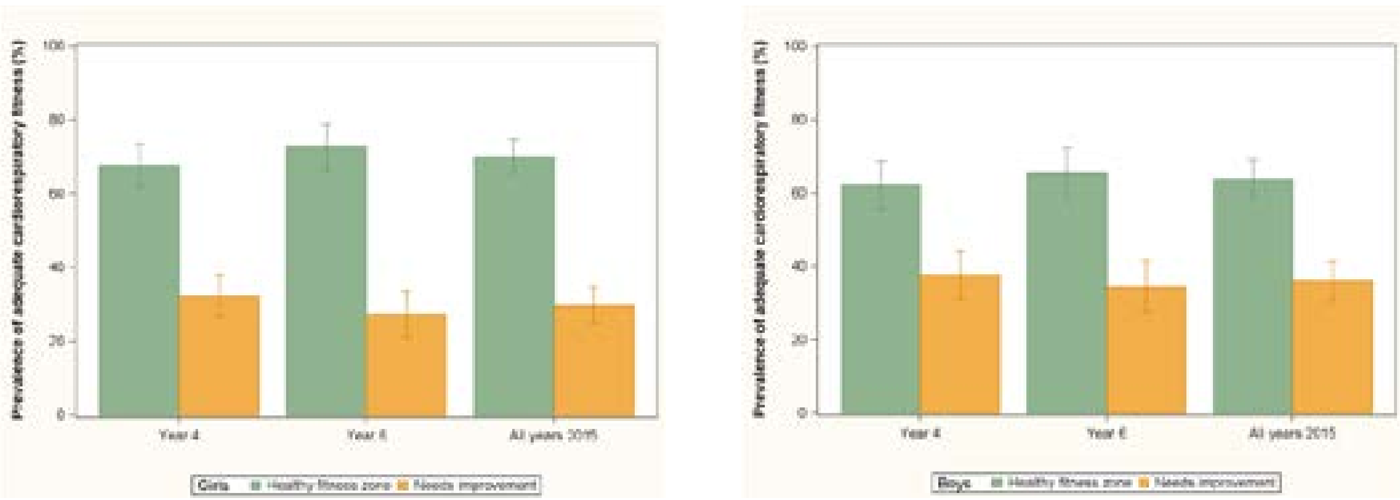
Table 8.6 and Figure 8.6 show the prevalence of HFZ for cardiorespiratory fitness in children by sex and year group in 2015, and in 2010 for comparison. Overall, 63% of children were in the HFZ for cardiorespiratory fitness. The prevalence of HFZ for cardiorespiratory fitness was significantly higher among girls (65%), compared with boys (60%). There were no significant changes in the prevalence of children in the HFZ for cardiorespiratory fitness between 2010 and 2015.

Table 8.6 Prevalence of HFZ for cardiorespiratory fitness among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 4	Year 6	All years	All years
ALL				
Healthy fitness zone	54.3 (3.4)	69.1 (2.8)	62.6	65.0 (2.3)
Needs improvement	45.7 (3.4)	30.9 (2.8)	37.4	35.0 (2.3)
GIRLS				
Healthy fitness zone	55.9 (3.6)	72.7 (3.1)	**65.4 (2.7) a**	70.0 (2.7)
Needs improvement	44.1 (3.6)	27.3 (3.1)	34.6 (2.7)	30.0 (2.7)
BOYS				
Healthy fitness zone	52.9 (3.7)	65.5 (3.5)	59.9 (2.8)	60.7 (2.7)
Needs improvement	47.1 (3.7)	34.5 (3.5)	40.1 (2.8)	39.3 (2.7)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 8.6 Prevalence of adequate cardiorespiratory fitness among children in primary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that two-thirds (63%) of children in primary school achieved the HFZ for cardiorespiratory fitness. Table 8.7 and Figure 8.7 show prevalence of the HFZ for cardiorespiratory fitness among children by sex, year group, socio-demographic characteristics and BMI category fitness in children in 2015, and in 2010 for comparison.

Locality

2015: Overall, there were no significant differences in the prevalence of HFZ for cardiorespiratory fitness between children from urban and rural areas.

Change between 2010-2015: There were no significant changes in the prevalence of HFZ for cardiorespiratory fitness among children from urban or rural areas between 2010 and 2015.

Socio-economic status

2015: Overall, the prevalence of HFZ for cardiorespiratory fitness was significantly lower among children from low SES (46%), compared with children from high SES backgrounds (68%). The prevalence was significantly lower among girls from low SES (49%), compared with girls from high (71%) SES backgrounds; and among boys from low SES (44%), compared with boys from high SES (65%) backgrounds.

Change between 2010-2015: Overall, the prevalence of the HFZ for cardiorespiratory fitness significantly decreased among girls from low SES backgrounds, from 61% in 2010 to 49% in 2015.

Cultural background

2015: Overall, the prevalence of the HFZ for cardiorespiratory fitness was significantly lower among children from Middle Eastern (42%) and Asian (53%) cultural backgrounds compared with children from English-speaking backgrounds (65%). The prevalence was significantly lower among girls from Middle Eastern cultural backgrounds (39%), compared with girls from English-speaking backgrounds (67%); and among boys from European (35%), Middle Eastern (45%) and Asian (48%) cultural backgrounds, compared with boys from English-speaking backgrounds (62%).

Change between 2010-2015: Overall, the prevalence of HFZ for cardiorespiratory fitness significantly decreased among boys from European cultural backgrounds, from 81% in 2010 to 35% in 2015.

Weight status

2015: Overall, the prevalence of the HFZ for cardiorespiratory fitness was significantly lower among children in the overweight (44%) and obese (21%) BMI categories compared with children in the healthy weight BMI category (73%). The prevalence was significantly lower among girls in the overweight (51%) and obese (24%) BMI categories, compared with girls in the healthy weight BMI category (74%); and among boys in the overweight (38%) and obese (17%) BMI categories, compared with boys in the healthy weight BMI category (71%).

Change between 2010-2015: Overall, there were no significant changes in the prevalence of the HFZ for cardiorespiratory fitness among children in different BMI categories between 2010 and 2015.

Table 8.7 Prevalence of the HFZ for cardiorespiratory fitness among children in primary school stratified by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015			210
	Year 4	Year 6	All years	All years
ALL				
Locality				
Urban (ref)	56.2 (3.3)	70.4 (3.4)	64.2 (2.6)	64.9 (2.6)
Rural	49.0 (8.9)	65.0 (4.0)	57.7 (5.6)	65.5 (4.9)
SES				
Low	**32.9 (5.3) a**	**57.1 (3.7) a**	**46.2 (3.2) a**	53.7 (3.7)
Middle	59.5 (4.3)	70.6 (3.5)	66.0 (3.2)	68.6 (2.0)
High (ref)	61.3 (4.7)	74.0 (4.8)	68.3 (3.5)	70.8 (3.7)
Cultural background				
English-speaking (ref)	56.5 (3.3)	70.8 (2.8)	64.6 (2.4)	67.6 (2.0)
European	56.1 (12.9)	69.6 (13.7)	64.0 (10.1)	68.8 (9.6)
Middle Eastern	**40.0 (5.5) a**	**42.8 (5.9) a**	**41.6 (4.2) a**	47.9 (7.9)
Asian	42.0 (7.9)	64.4 (5.2)	**53.4 (4.2) a**	50.5 (6.8)
BMI category				
Thin	64.5 (5.9)	77.4 (5.3)	71.2 (3.9)	77.8 (3.7)
Healthy weight (ref)	65.0 (4.0)	78.2 (2.8)	72.6 (2.5)	75.4 (1.9)
Overweight	**36.6 (4.7) a**	**49.4 (3.8) a**	**44.1 (3.1) a**	50.3 (3.8)
Obese	**16.4 (4.1) a**	**24.7 (4.9) a**	**20.7 (3.2) a**	18.6 (3.7)
GIRLS				
Locality				
Urban (ref)	57.8 (3.8)	75.6 (3.1)	68.0 (2.6)	70.0 (2.8)
Rural	50.4 (8.4)	**62.8 (6.1) a**	57.0 (5.9)	70.3 (8.3)
SES				
Low	**33.0 (4.6) a**	**61.4 (5.8) a**	**48.8 (3.7) a**	**60.6 (5.0) b**
Middle	62.8 (4.3)	72.3 (4.9)	68.3 (3.7)	73.2 (3.2)
High (ref)	61.8 (5.6)	78.7 (4.2)	71.3 (3.8)	76.3 (3.9)
Cultural background				
English-speaking (ref)	58.8 (3.6)	73.6 (3.2)	67.3 (2.7)	72.3 (2.4)
European	61.7 (17.2)	100.0 (0.0)	86.0 (8.2)	57.2 (14.7)
Middle Eastern	**30.1 (6.2) a**	**45.9 (5.4) a**	**38.5 (2.9) a**	46.9 (6.9)
Asian	47.3 (8.9)	70.9 (8.3)	59.3 (5.6)	66.5 (7.8)
BMI category				
Thin	73.5 (6.2)	77.0 (6.5)	75.6 (5.2)	86.8 (3.5)
Healthy weight (ref)	65.4 (4.5)	79.9 (3.1)	74.0 (2.8)	78.1 (2.4)
Overweight	**40.6 (6.3) a**	**59.1 (5.1) a**	**50.6 (3.8) a**	60.8 (4.8)
Obese	**21.5 (6.1) a**	**26.9 (6.5) a**	**24.3 (4.6) a**	25.9 (6.1)

	2015			210
	Year 4	Year 6	All years	All years
BOYS				
Locality				
Urban (ref)	54.7 (3.6)	65.0 (4.5)	60.5 (3.1)	60.4 (3.1)
Rural	47.8 (9.8)	67.0 (3.4)	58.3 (6.0)	62.2 (3.3)
SES				
Low	**32.8 (6.5) a**	**53.1 (4.4) a**	**43.9 (4.6) a**	46.5 (4.1)
Middle	56.2 (5.8)	69.0 (4.0)	63.8 (3.9)	65.0 (2.0)
High (ref)	60.9 (5.2)	69.0 (6.2)	65.2 (3.9)	66.7 (4.4)
Cultural background				
English-speaking (ref)	54.3 (3.8)	68.1 (3.5)	62.0 (2.8)	63.7 (2.3)
European	50.6 (19.9)	**20.7 (13.7) a**	**35.1 (12.3) a**	**81.3 (11.0) b**
Middle Eastern	51.4 (9.4)	**39.9 (9.8) a**	**44.6 (8.0) a**	48.7 (10.4)
Asian	36.7 (9.2)	58.0 (6.8)	**47.6 (5.4) a**	37.2 (7.5)
BMI category				
Thin	55.4 (8.8)	78.2 (8.4)	65.1 (5.9)	66.6 (7.0)
Healthy weight (ref)	64.5 (4.3)	76.5 (3.5)	71.2 (2.9)	73.2 (2.2)
Overweight	**32.3 (6.3) a**	**41.9 (4.7) a**	**38.3 (3.8) a**	41.7 (4.7)
Obese	**11.2 (6.0) a**	**22.6 (7.5) a**	**17.1 (5.1) a**	12.6 (4.3)

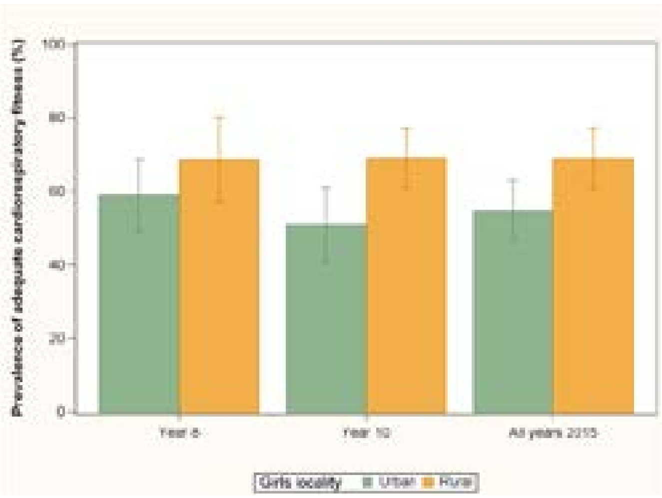
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

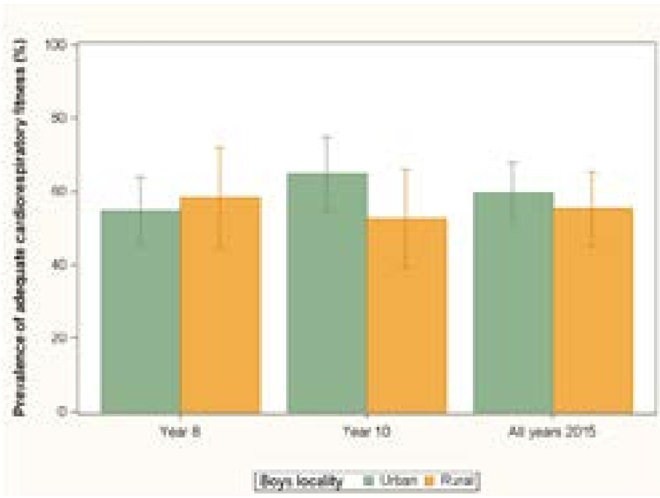
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

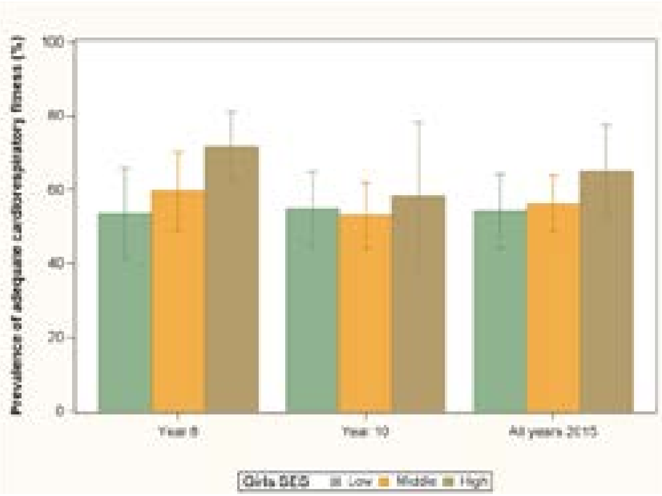
na *Indicates statistical significance could not be calculated due to low numbers.*

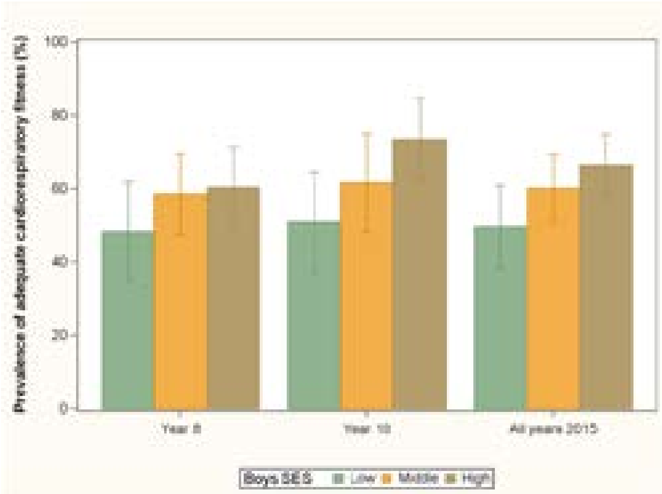
No letter means there was no statistical difference.

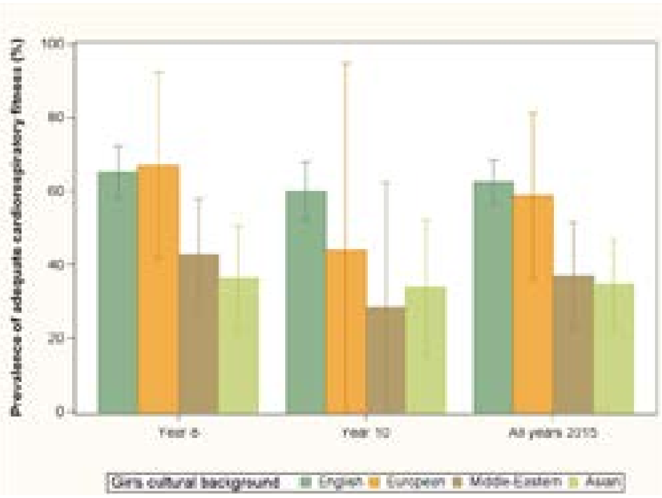
Figure 8.7 Prevalence of the HFZ for cardiorespiratory fitness among children in primary school stratified by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

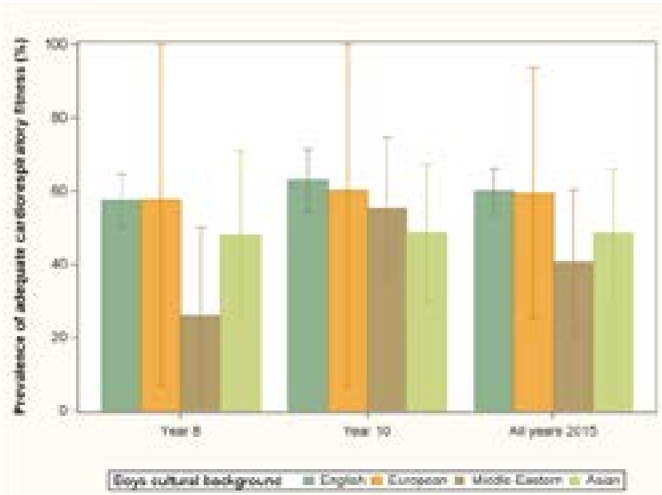


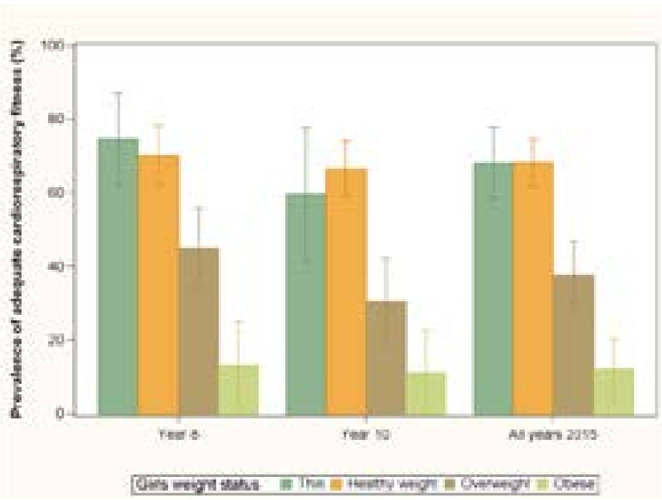


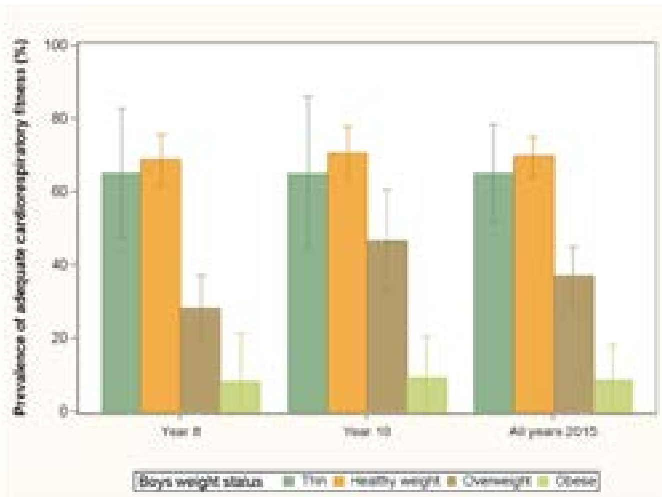

Prevalence of adequate cardiorespiratory fitness (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Prevalence of adequate cardiorespiratory fitness (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Prevalence of adequate cardiorespiratory fitness (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of adequate cardiorespiratory fitness (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of adequate cardiorespiratory fitness (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of adequate cardiorespiratory fitness (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

MULTI-STAGE SHUTTLE RUN TEST (20MSRT) DISTRIBUTIONS

Table 8.8 shows the percentile distributions, median, mean and standard deviations for lap numbers on the 20MSRT by sex and year group. Centile charts are useful to show the position of a measured parameter (e.g., the number of laps) within a statistical distribution. They do not show if that parameter is normal or abnormal, rather how that value compares with that measurement in other individuals. Among boys in Year 4 and Year 6, the median number of laps completed was 23 and 31, respectively. Among girls in Year 4 and Year 6, the median number of laps completed was 16 and 24, respectively.

Table 8.8 Lap centiles (number) on the 20MSRT by sex and year group

CENTILE	BOYS		GIRLS	
	Year 4	Year 6	Year 4	Year 6
5	0.0	6.0	0.0	7.0
10	0.0	10.0	0.0	9.0
15	8.0	13.0	8.0	11.0
20	10.0	16.0	9.0	12.0
25	11.0	18.0	10.0	14.0
30	14.0	21.0	11.0	16.0
35	16.0	23.0	12.0	17.0
40	17.0	25.0	14.0	19.0
45	19.0	28.0	15.0	21.0
Median	23.0	31.0	16.0	24.0
55	24.0	33.0	17.0	25.0
60	28.0	36.0	18.0	26.0
65	32.0	41.0	20.0	29.0
70	35.0	43.0	22.0	31.0
75	38.0	50.0	25.0	34.0
80	42.0	52.0	28.0	38.0
85	48.0	58.0	31.0	43.0
90	52.0	64.0	36.0	48.0
95	61.0	71.0	42.0	57.0
N	37,525	37,858	39,363	37,549
Mean	25.9	34.4	18.4	25.9
Std. Dev.	18.8	21.2	12.9	16.2

MUSCULAR FITNESS

Muscular fitness, or anaerobic fitness, is the ability of muscles to undertake short-duration activities primarily powered by metabolic pathways that do not use oxygen. A recent review of muscular fitness found evidence for a number of health-related benefits in children. Muscular fitness was protective against total and central adiposity, cardiovascular disease, metabolic risk factors and has beneficial effects on bone health and self-esteem.[22]

Anaerobic fitness underpins most of children's daily physical activity, which is typically composed of short bursts of activity. In addition, many sports children play have highly intermittent activity characterised by rapid changes between low to vigorous intensity typically lasting <15 seconds.[23] Potentially, the inclusion of short-term, high-intensity intermittent training (HIIT) and resistance training in children's physical activity programs (including physical education lessons) may be beneficial to the health and fitness of children,[24-26] especially given children's low participation in physical activity,[27] low levels of cardiorespiratory fitness28 and low mastery of fundamental movement skills.[29]

Based on the evidence that muscular fitness is associated with a range of favourable health outcomes, the revised Australian Physical Activity Guidelines for Children (5-12 years) includes a recommendation that children '*engage in activities that strengthen muscle and bone on at least three days per week*'.[6]

Hence, muscular fitness was included for the first time in SPANS 2015 to determine the population prevalence among NSW children. There are several dimensions of muscular fitness that may be assessed (maximal isometric strength, muscular endurance, muscle power) and the most common validated field test is the standing broad jump, which assesses lower limb explosive power.[30]

There are no criterion-referenced standards for the broad jump in children, only norm-referenced standards, which are not linked to clinical outcomes. For SPANS, the age-sex adjusted 40th centile[31] of the Eurofit Physical Fitness Test Battery protocol for the standing broad jump[32] was used to assess muscular fitness, and children were dichotomised as achieving the healthy fitness zone (HFZ; i.e., ≥40th centile) or needs improvement zone (NIZ; i.e., < 40th centile).

Muscular fitness was assessed in children in Years 2, 4 and 6, and this section reports the prevalence of achieved HFZ for muscular fitness by sex, year group, demographic characteristics and BMI category in 2015.

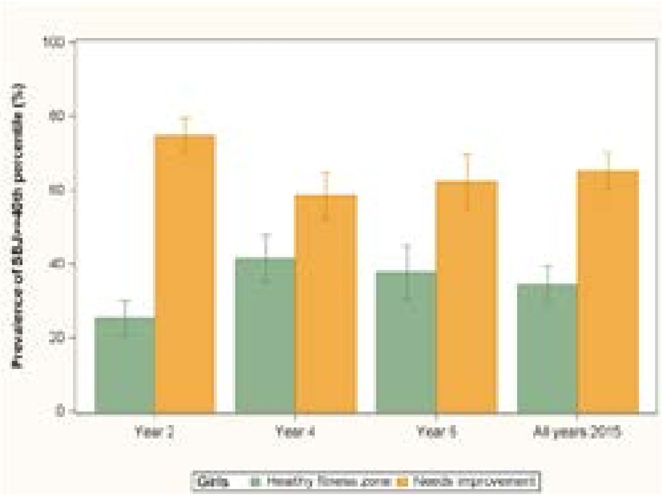
Table 8.9 and Figure 8.8 show the prevalence of HFZ for muscular fitness in children by sex and year group in 2015. Overall, 37% of children were in the HFZ for muscular fitness.

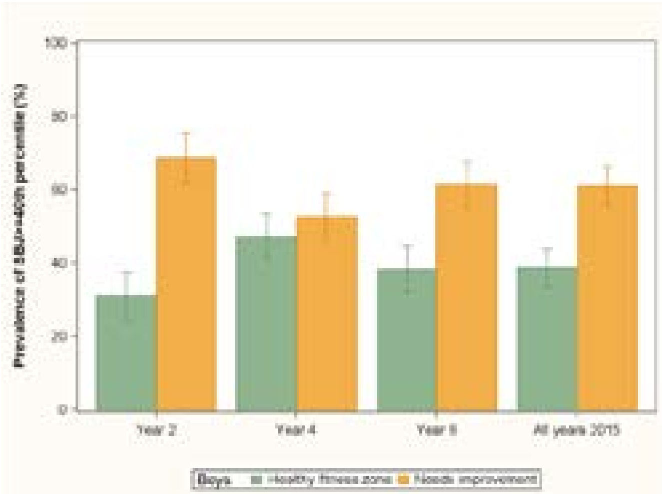
Table 8.9 Prevalence of HFZ for muscular fitness among children in primary school by sex and year group in 2015 (%, SE)

	2015			
	Year 2	Year 4	Year 6	All years
ALL				
Healthy fitness zone	28.2 (2.3)	44.3 (2.7)	38.1 (2.9)	36.7 (2.2)
Needs improvement	71.8 (2.3)	55.7 (2.7)	61.9 (2.9)	63.3 (2.2)
GIRLS				
Healthy fitness zone	25.4 (2.4)	41.5 (3.1)	37.7 (3.6)	34.6 (2.4)
Needs improvement	74.6 (2.4)	58.5 (3.1)	62.3 (3.6)	65.4 (2.4)
BOYS				
Healthy fitness zone	31.2 (3.3)	47.3 (3.1)	38.4 (3.1)	38.9 (2.5)
Needs improvement	68.8 (3.3)	52.7 (3.1)	61.6 (3.1)	61.1 (2.5)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 8.8 Prevalence of HFZ for muscular fitness among children in primary school by sex and year group in 2015 (%, 95%CI)





SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that one-third (37%) of children in primary school achieved the HFZ for muscular fitness. Table 8.10 and Figure 8.9 show the prevalence of achieving the HFZ for muscular fitness in children by sex, year group, socio-demographic characteristics, and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of achieved HFZ for muscular fitness between urban and rural children.

Socio-economic status

2015: Overall, the prevalence of the achieved HFZ for muscular fitness was significantly lower among children from low SES (26%) compared with children from high SES (42%) backgrounds. The prevalence was significantly lower among girls from low SES (22%), compared with girls from high SES backgrounds (40%); and among boys from low SES (29%), compared with boys from high SES backgrounds (44%).

Cultural background

2015: Overall, the prevalence of the achieved HFZ for muscular fitness was significantly lower among children from Middle Eastern (15%) and Asian cultural backgrounds (29%), compared with children from English-speaking backgrounds (38%). The prevalence was significantly lower among girls from Middle Eastern cultural backgrounds (10%), compared with girls from English-speaking backgrounds (36%); and among boys from Middle Eastern (20%) and Asian (21%) cultural backgrounds, compared with boys from English-speaking backgrounds (41%).

Weight status

2015: Overall, the prevalence of achieved HFZ for muscular fitness was significantly lower among children in the overweight (24%) and obese (11%) BMI categories, compared with children in the healthy weight BMI category (43%). The prevalence was significantly lower among girls in the overweight (22%) and obese (12%) BMI categories, and significantly higher among girls in the thin BMI category (50%), compared with girls in the healthy weight BMI category (40%). The prevalence was significantly lower among boys in the overweight (27%) and obese (11%) BMI categories compared with boys in the healthy weight BMI category (46%).

Table 8.10 Prevalence of achieved HFZ for muscular fitness among primary school children stratified by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015			
	Year 2	Year 4	Year 6	All years
ALL				
Locality				
Urban (ref)	26.7 (2.1)	43.9 (3.1)	37.2 (3.3)	35.7 (2.2)
Rural	33.8 (6.9)	45.5 (5.0)	41.0 (6.1)	40.3 (5.6)
SES				
Low	20.8 (3.3)	**30.9 (5.3) a**	**25.1 (4.8) a**	**25.7 (4.1) a**
Middle	32.1 (4.3)	43.6 (3.8)	37.1 (4.7)	37.5 (3.9)
High (ref)	28.6 (2.9)	52.1 (3.1)	45.8 (2.9)	41.7 (1.7)
Cultural background				
English-speaking (ref)	28.9 (2.3)	46.8 (2.5)	39.3 (2.9)	38.2 (2.1)
European	50.2 (11.5)	30.6 (12.1)	49.8 (13.6)	45.5 (8.3)
Middle Eastern	**10.3 (3.0) a**	**18.1 (5.5) a**	**17.3 (8.8) a**	**15.1 (3.5) a**
Asian	24.9 (6.1)	**31.7 (4.8) a**	32.5 (7.1)	**29.4 (3.8) a**
BMI category				
Thin	29.2 (6.4)	53.3 (5.7)	52.3 (5.0)	45.9 (3.6)
Healthy weight (ref)	33.1 (2.8)	54.1 (2.9)	43.4 (3.3)	43.2 (2.3)
Overweight	**21.5 (3.0) a**	**25.5 (3.3) a**	**25.3 (3.5) a**	**24.3 (2.5) a**
Obese	**12.0 (3.8) a**	**14.9 (4.1) a**	**5.9 (2.5) a**	**11.3 (2.0) a**
GIRLS				
Locality				
Urban (ref)	25.2 (2.5)	41.9 (3.7)	38.1 (4.1)	34.6 (2.6)
Rural	26.1 (6.1)	40.3 (5.6)	36.5 (7.5)	34.7 (6.0)
SES				
Low	**15.0 (2.3) a**	**29.0 (5.0) a**	**21.3 (4.7) a**	**22.0 (3.3) a**
Middle	30.7 (4.2)	40.6 (4.1)	36.5 (5.1)	35.9 (3.7)
High (ref)	25.6 (3.5)	48.8 (4.4)	46.9 (4.5)	39.5 (2.9)
Cultural background				
English-speaking (ref)	25.8 (2.5)	43.4 (3.1)	38.7 (3.4)	35.8 (2.3)
European	48.3 (16.3)	na	52.9 (15.8)	39.1 (10.9)
Middle Eastern	**5.3 (3.4) a**	**18.5 (9.2) a**	**6.5 (3.3) a**	**10.4 (3.3) a**
Asian	29.1 (9.5)	40.7 (6.0)	40.8 (10.7)	36.4 (5.2)
BMI category				
Thin	36.2 (8.9)	57.4 (7.0)	52.9 (6.6)	**49.6 (4.5) a**
Healthy weight (ref)	29.5 (2.6)	49.9 (3.9)	41.8 (3.8)	40.0 (2.6)
Overweight	**16.3 (3.5) a**	**24.1 (4.1) a**	**25.0 (5.5) a**	**21.9 (3.1) a**
Obese	**11.9 (4.2) a**	**15.2 (5.1) a**	**7.6 (4.4) a**	**11.9 (2.9) a**

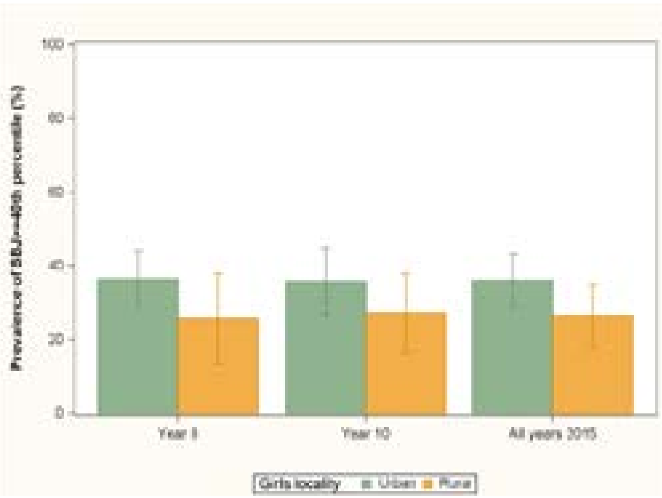
	2015			
	Year 2	Year 4	Year 6	All years
BOYS				
Locality				
Urban (ref)	28.4 (3.0)	46.2 (3.5)	36.3 (3.6)	36.8 (2.5)
Rural	40.6 (9.2)	50.7 (6.3)	45.0 (5.6)	45.6 (6.3)
SES				
Low	25.7 (6.8)	**32.8 (6.8) a**	**28.7 (5.8) a**	**29.0 (5.9) a**
Middle	33.6 (5.7)	47.0 (5.3)	37.7 (5.0)	39.2 (4.7)
High (ref)	32.2 (4.0)	55.5 (3.4)	44.7 (3.9)	44.1 (1.7)
Cultural background				
English-speaking (ref)	32.2 (3.3)	50.1 (2.9)	39.9	40.7 (2.4)
European	51.7 (13.7)	61.1 (19.3)	44.7	52.1 (12.0)
Middle Eastern	16.2 (8.2)	**17.7 (6.1) a**	27.2 (14.5)	**20.2 (5.4) a**
Asian	19.5 (6.6)	**18.9 (7.1) a**	24.4 (8.6)	**20.8 (4.7) a**
BMI category				
Thin	20.4 (6.5)	49.1 (7.6)	51.1 (8.3)	40.9 (4.5)
Healthy weight (ref)	36.7 (4.0)	58.3 (3.0)	45.0 (4.1)	46.3 (2.8)
Overweight	28.2 (5.3)	**26.9 (4.4) a**	**25.5 (3.9) a**	**26.7 (3.0) a**
Obese	**12.1 (5.8) a**	**14.6 (5.7) a**	**4.2 (2.8) a**	**10.8 (2.8) a**

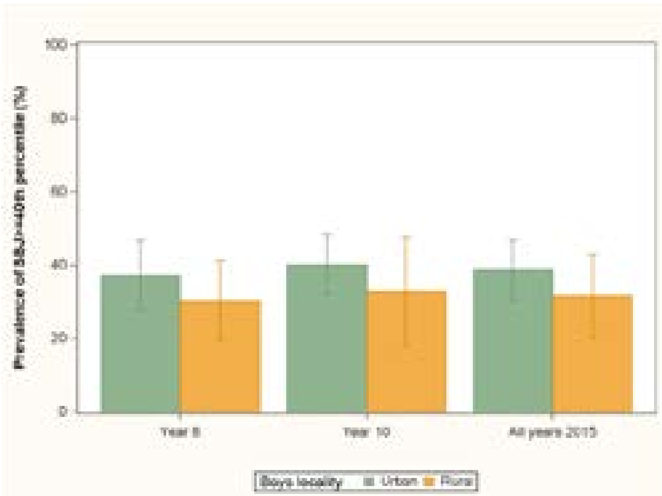
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

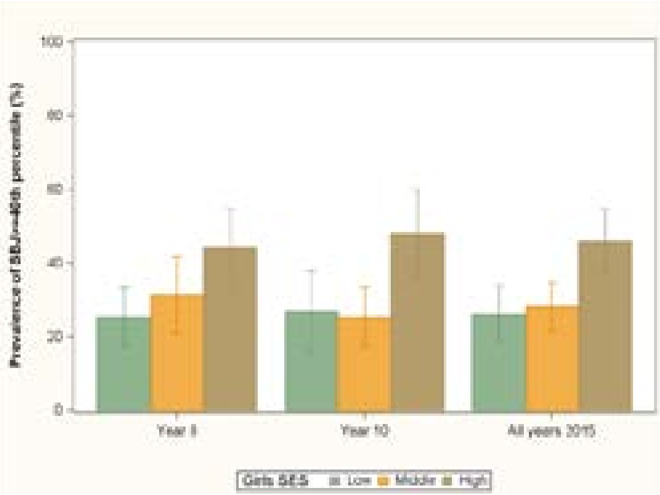
na *Indicates statistical significance could not be calculated due to low numbers*

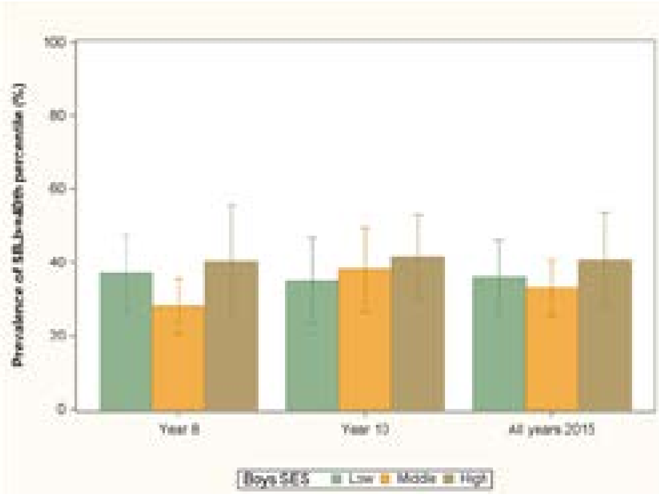
No letter means there was no statistical difference

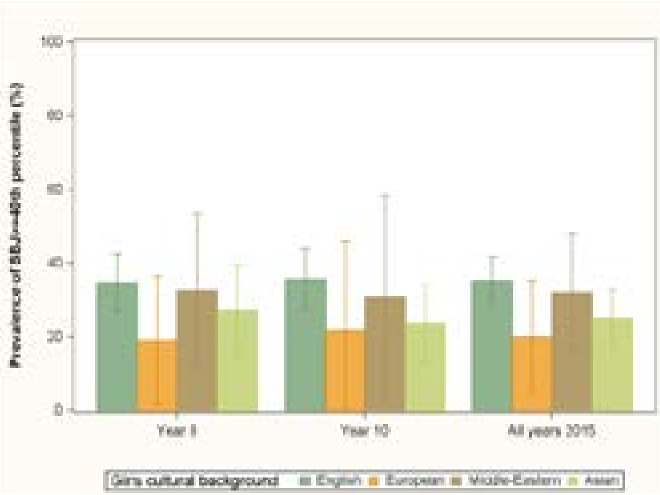
Figure 8.9 Prevalence of achieved HFZ for muscular fitness among children in primary school stratified by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

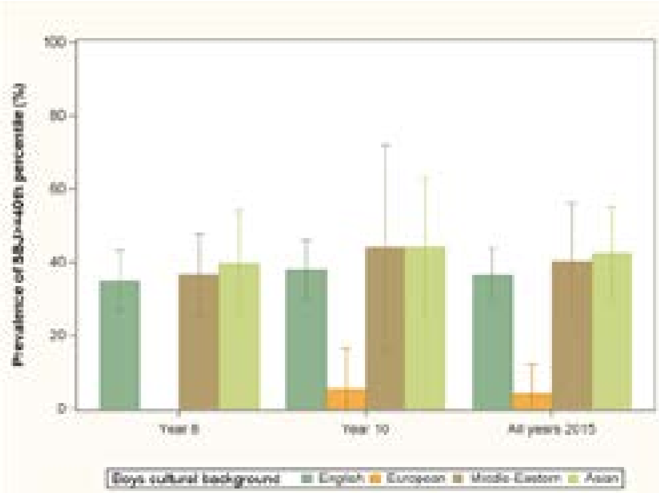


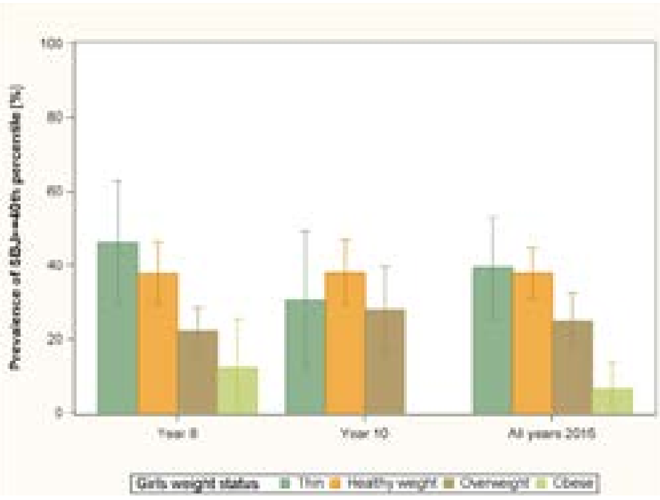


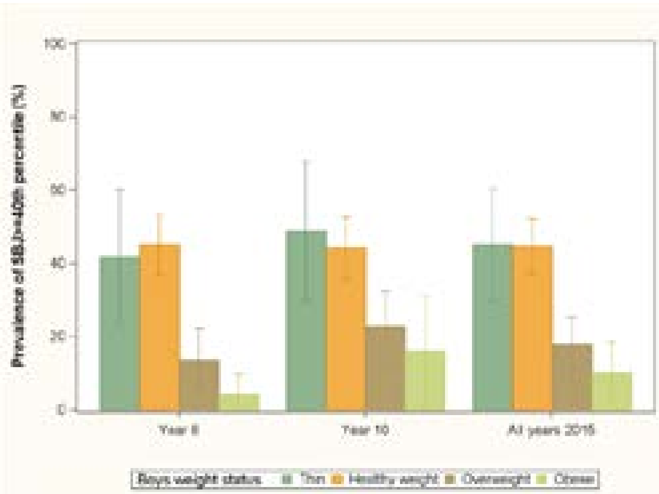

Prevalence of SBJ>=40th percentile (%)
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Prevalence of SBJ>=40th percentile (%)
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Prevalence of SBJ>=40th percentile (%)
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of SBJ>=40th percentile (%)
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of SBJ>=40th percentile (%)
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of SBJ>=40th percentile (%)
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

STANDING BROAD JUMP DISTRIBUTIONS

Table 8.11 shows the percentile distributions, median, mean and standard deviations for the distance for the standing broad jump (cms) by sex and year group. Centile charts are useful to show the position of a measured parameter (e.g., the distance jumped) within a statistical distribution. They do not show if that parameter is normal or abnormal, rather how that value compares with that measurement in other individuals. Among boys in Years 2, 4, and 6, the median standing broad jump (cm) was 113.5 cm, 128.8cm, and 141.0cm, respectively. Among girls in Years 2, 4, and 6, the median standing broad jump (cms) was 102.4cm, 118.0cm, and 130.4cm, respectively

Table 8.11 Standing broad jump (cm) centiles by sex and year group

CENTILE	BOYS			GIRLS		
	Year 2	Year 4	Year 6	Year 2	Year 4	Year 6
5	73.0	92.0	99.6	70.0	84.4	88.6
10	83.0	99.4	107.6	78.0	92.8	99.0
15	89.9	105.4	113.6	82.2	97.6	105.2
20	93.0	111.0	120.2	86.2	101.8	111.0
25	97.6	114.0	124.8	90.4	105.6	115.0
30	101.0	117.0	129.2	93.1	108.2	118.4
35	105.6	120.2	131.4	95.1	110.2	122.2
40	108.4	123.2	134.4	97.8	113.4	125.0
45	111.4	126.1	137.4	100.0	115.8	127.8
Median	113.5	128.8	141.0	102.4	118.0	130.4
55	116.0	131.4	143.8	104.0	121.0	133.4
60	118.2	134.0	147.2	106.1	122.8	137.0
65	121.2	137.0	150.6	108.6	125.2	139.8
70	124.1	139.8	154.0	110.6	127.2	143.9
75	127.4	142.6	156.1	114.0	130.8	147.2
80	130.0	144.8	159.0	116.6	134.4	151.4
85	134.8	149.4	162.8	119.8	137.8	156.4
90	138.8	155.9	167.2	124.3	144.0	160.2
95	143.2	162.0	179.0	131.2	150.8	166.2
N	36,039	36,110	36,837	38,995	37,704	36,818
Mean	111.7	128.0	139.7	101.6	118.0	130.2
Std. Dev.	22.0	21.5	23.9	18.3	19.8	23.9

SUMMARY OF THE PHYSICAL ACTIVITY & FITNESS LEVELS OF CHILDREN IN PRIMARY SCHOOL

The table below summarises the prevalence of indicators of physical activity and fitness (cardiorespiratory and muscular) in children in primary school.

Physical activity indicator	Australian guidelines	SPANS benchmark	Prevalence (%)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
Physical activity participation	Children age 5-12 years should participate in *at least 60 minutes every day of moderate to vigorous physical activity*	≥60mins spent in moderate to vigorous physical activity every day[10]	n/a	23.0%	**2015:** Overall, the proportion of children meeting the physical activity recommendation was significantly lower among children in urban areas, from Middle Eastern and Asian cultural backgrounds, and in the overweight and the obese BMI categories
Know the physical activity recommendation for children age 5-12 years		60 minutes a day	17.3%	26.6% sig	**2015:** Overall, the proportion of parents of children in Years K, 2 and 4 and children in Year 6 who know the physical activity recommendation was significantly lower among girls. Further subgroup differences were not assessed **Change between 2010-15:** Overall, the proportion of parents of children in Years K, 2 and 4 and children in Year 6 who know the physical activity recommendation significantly increased between 2010 and 2015. Within subgroup differences were not assessed
Cardiorespiratory fitness (20MSRT)	There are no specific guidelines	Children categorised as achieving HFZ† according to the age- and sex- adjusted criterion-referenced standards for cardiorespiratory fitness[19]	65.0%	62.6%	**2015:** Overall, the proportion of children achieving the HFZ in cardiorespiratory fitness was significantly higher among girls and significantly lower among children from low SES backgrounds, from Middle Eastern and Asian cultural backgrounds, and in the overweight and the obese BMI categories **Change between 2010-15:** Overall, there were no significant changes in achieving the HFZ in cardiorespiratory fitness between 2010 and 2015. Within subgroups, achieving the HFZ in cardiorespiratory fitness significantly decreased in girls
Muscular fitness (Standing broad jump)	There are no specific guidelines	Children categorise as achieving HFZ according to the age- and sex- adjusted 40th centile for muscular fitness[31, 32]	n/a	36.7%	**2015:** Overall, the proportion of children achieving the HFZ for muscular fitness was significantly lower among children from low SES backgrounds, from Middle Eastern and Asian cultural backgrounds, and in the overweight and the obese BMI categories

†HFZ *healthy fitness zone*
sig *Indicates statistically significant difference at P < 0.05*
* *Comparisons are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category*
n/a *not assessed in 2010*

SECONDARY SCHOOL

Physical activities are generally classified as low, moderate, or vigorous intensity on the basis of energy expenditure measured in metabolic equivalents (METs).[5] (METs are the ratio of activity to resting energy expenditure). Health benefits accrue from spending bouts of at least 10 minutes in physical activities that are at least of a moderate intensity, which for adolescents has been defined as MET ≥3.0 or 4.0[1,5].

Australia's national guideline for physical activity[6] recommends that for health benefits adolescents aged 13 to 18 years should:

1. *Accumulate at least 60 minutes of moderate to vigorous intensity physical activity every day*
2. *Include a variety of aerobic activities, including some vigorous intensity activity*
3. *On at least three days per week, adolescents should engage in activities that strengthen muscle and bone*
4. *Engage in more activity – up to several hours per day to achieve additional health benefits*

In previous SPANS, physical activity participation of adolescents was measured using the Adolescent Physical Activity Recall Questionnaire (APARQ).[8] This question has been replaced with a single item, validated question endorsed by the Australian Healthy Kids Alliance as the primary indicator for population monitoring of adolescent physical activity.[9] The question asks respondents to report, '*Over the past 7 days, on how many days were you engaged in moderate to vigorous physical activity for at least 60 minutes (this can be accumulated over the entire day, for example in 10-minute intervals) each day?*' Response categories were 0 to 7 days and adolescents reporting 7 days were considered to meet the physical activity recommendations. The prevalence (%) estimates need to be interpreted along with their standard errors (SE); a large standard error means a less precise estimate.

DAYS SPENT IN PHYSICAL ACTIVITY

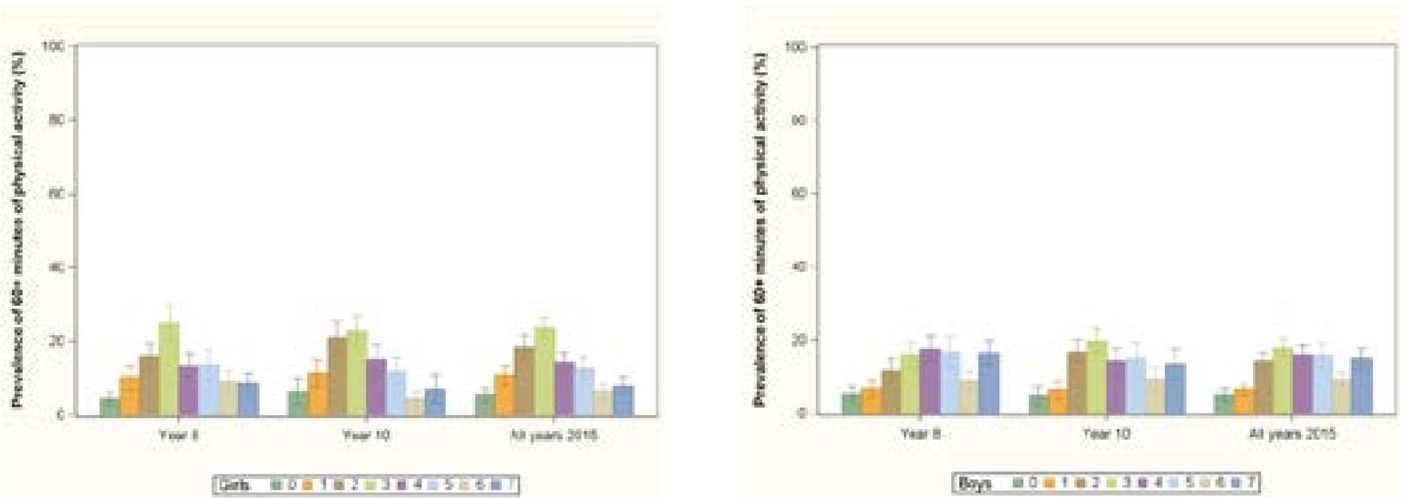
Table 8.12 and Figure 8.10 show the prevalence of days spent in moderate to vigorous physical activity (MVPA) for at least 60 minutes each day in adolescents in 2015 by sex and year group. Overall 5% of adolescents did not achieve 60 minutes of MVPA on any days and 12% spent at least 60 minutes in MVPA every day of the week. Overall, there appear to be some differences between the number of days that girls and boys engaged in at least 60 minutes of MVPA; with girls spending on average 3.4 days (SD=1.9) and boys spending on average 3.9 days (SD=2.0) in at least 60 minutes of MVPA a week.

Table 8.12 Prevalence of spending at least 60 minutes daily in MVPA among adolescents by sex and year group in 2015 (%, SE)

DAYS	2015		
	Year 8	Year 10	All years
ALL			
0 days	4.9 (0.8)	5.6 (1.2)	5.3 (0.8)
1 day	8.3 (1.0)	8.9 (1.1)	8.6 (0.8)
2 days	13.7 (1.2)	19.0 (1.3)	16.4 (0.9)
3 days	20.3 (1.2)	21.2 (1.3)	20.8 (0.7)
4 days	15.6 (1.3)	14.7 (1.3)	15.1 (0.9)
5 days	15.3 (1.6)	13.4 (1.3)	14.3 (1.1)
6 days	9.0 (0.9)	6.9 (0.9)	8.0 (0.7)
7 days	12.8 (1.2)	10.2 (1.5)	11.5 (1.1)
GIRLS			
0 days	4.4 (0.9)	6.4 (1.7)	5.5 (1.0)
1 day	10.1 (1.6)	11.3 (1.8)	10.7 (1.3)
2 days	15.9 (1.9)	21.0 (2.2)	18.5 (1.5)
3 days	24.9 (2.3)	22.6 (2.1)	23.7 (1.3)
4 days	13.3 (1.6)	15.1 (1.9)	14.3 (1.2)
5 days	13.7 (2.2)	12.0 (1.8)	12.8 (1.5)
6 days	9.0 (1.4)	4.4 (1.0)	6.6 (1.0)
7 days	8.7 (1.3)	7.1 (1.9)	7.9 (1.2)
BOYS			
0 days	5.2 (1.0)	4.9 (1.2)	5.1 (0.8)
1 day	6.7 (1.2)	6.5 (1.2)	6.6 (0.8)
2 days	11.8 (1.5)	16.9 (1.6)	14.3 (1.2)
3 days	16.2 (1.7)	19.8 (1.7)	18.0 (1.2)
4 days	17.7 (1.8)	14.2 (1.9)	16.0 (1.4)
5 days	16.8 (2.1)	14.8 (2.2)	15.8 (1.7)
6 days	9.0 (1.3)	9.5 (1.6)	9.3 (1.0)
7 days	16.6 (1.6)	13.4 (2.1)	15.0 (1.5)

Note: No significance testing was conducted.

Figure 8.10 Prevalence of days spent in at least 60 minutes daily in MVPA among adolescents by sex and year group in 2015 (%, 95%CI)



MEETING THE PHYSICAL ACTIVITY RECOMMENDATION

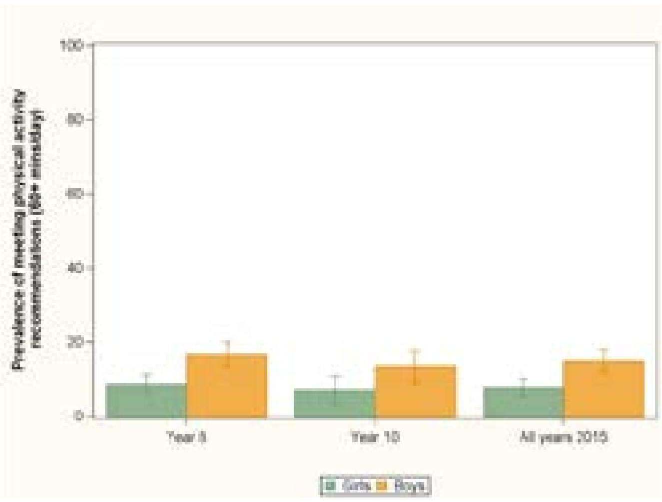
Table 8.13 and Figure 8.11 show the prevalence of meeting the daily physical activity recommendation among adolescents by sex and year group in 2015. Overall, 12% of adolescents met the physical activity recommendation and the prevalence was significantly lower among girls (8%), compared with boys (15%).

Table 8.13 Prevalence of meeting the physical activity recommendation among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)

	2015		
	Year 8	Year 10	All years
ALL			
Met physical activity recommendation	12.8 (1.2)	10.2 (1.5)	11.5 (1.1)
Did not meet physical activity recommendation	87.2 (1.2)	89.8 (1.5)	88.5 (1.1)
GIRLS			
Met physical activity recommendation	**8.7 (1.3) a**	**10.2 (1.9) a**	**7.9 (1.2) a**
Did not meet physical activity recommendation	91.3 (1.3)	89.8 (1.9)	92.1 (1.2)
BOYS			
Met physical activity recommendation	16.6 (1.6)	13.4 (2.1)	15.0 (1.5)
Did not meet physical activity recommendation	83.4 (1.6)	86.6 (2.1)	85.0 (1.5)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 8.11 Prevalence of meeting the physical activity recommendation among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately one in eight (12%) adolescents met the physical activity recommendation of at least 60 minutes of daily MVPA. Table 8.14 and Figure 8.12 show the prevalence of meeting the physical activity recommendation among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of meeting the daily physical activity recommendation between adolescents from urban and rural areas.

Socio-economic status

2015: Overall, there were no significant differences in meeting the daily physical activity recommendation between adolescents from different SES backgrounds.

Cultural background

2015: Overall, the prevalence of meeting the physical activity recommendation was significantly lower among adolescents from Asian cultural backgrounds (6%), compared with adolescents from English-speaking backgrounds (12%). The prevalence was significantly lower among girls from Asian cultural backgrounds (3%), compared with girls from English-speaking backgrounds (9%); and significantly higher among boys from European cultural backgrounds (40%), compared with boys from English-speaking backgrounds (15%).

Weight status

2015: Overall, the prevalence of meeting the daily physical activity recommendation was significantly higher among girls from the thin (15%) and obese (15%) BMI categories, compared with girls in the healthy weight BMI category (7%).

Table 8.14 Prevalence of meeting the physical activity recommendation among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015		
	Year 8	Year 10	All years
ALL			
Locality			
Urban (ref)	12.8 (1.3)	8.9 (1.7)	10.8 (1.2)
Rural	12.8 (2.4)	13.9 (3.1)	13.3 (2.3)
SES			
Low	13.2 (2.4)	10.8 (2.7)	12.0 (2.2)
Middle	13.6 (2.2)	8.2 (1.6)	10.9 (1.4)
High (ref)	11.7 (1.6)	11.5 (3.2)	11.6 (2.1)
Cultural background			
English-speaking (ref)	12.9 (1.4)	10.6 (1.5)	11.8 (1.2)
European	3.7 (3.8)	30.1 (19.0)	17.7 (10.7)
Middle Eastern	19.2 (5.4)	4.7 (3.3)	11.8 (2.7)
Asian	8.6 (2.8)	4.2 (2.4)	**6.0 (2.0) a**
BMI category			
Thin	14.6 (4.3)	9.5 (4.4)	12.3 (3.3)
Healthy weight (ref)	13.3 (1.4)	10.6 (1.7)	11.9 (1.3)
Overweight	10.2 (2.1)	9.1 (2.5)	9.6 (1.6)
Obese	14.8 (5.5)	12.2 (4.7)	13.5 (3.8)

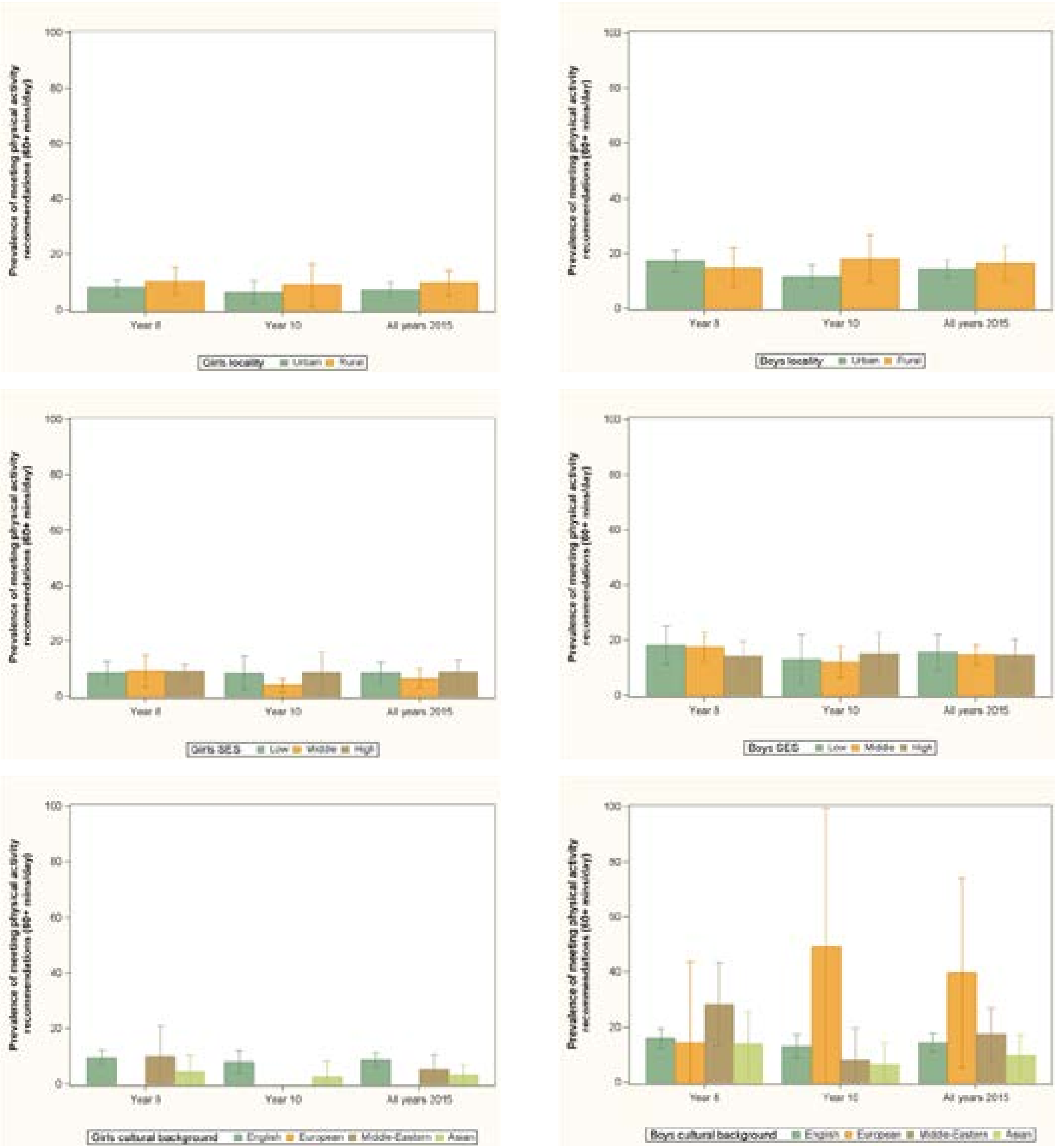
	2015		
	Year 8	Year 10	All years
GIRLS			
Locality			
Urban (ref)	8.1 (1.4)	6.5 (2.1)	7.3 (1.3)
Rural	10.4 (2.4)	9.0 (3.8)	9.7 (2.2)
SES			
Low	8.4 (2.1)	8.3 (3.0)	8.4 (2.0)
Middle	9.0 (2.9)	4.0 (1.2)	6.4 (1.7)
High (ref)	8.9 (1.3)	8.5 (3.8)	8.7 (2.1)
Cultural background			
English-speaking (ref)	9.5 (1.4)	8.1 (2.0)	8.8 (1.3)
European	na	na	na
Middle Eastern	10.0 (5.4)	na	5.3 (2.7)
Asian	4.4 (2.9)	2.7 (2.8)	**3.4 (1.9) a**
BMI category			
Thin	16.4 (5.6)	13.5 (8.3)	**15.1 (5.2) a**
Healthy weight (ref)	7.3 (1.4)	6.3 (1.6)	6.8 (1.1)
Overweight	7.2 (2.1)	7.1 (3.8)	7.2 (2.4)
Obese	17.9 (9.3)	11.4 (6.0)	**14.9 (5.9) a**
BOYS			
Locality			
Urban (ref)	17.3 (1.9)	11.5 (2.2)	14.4 (1.6)
Rural	14.8 (3.6)	18.2 (4.3)	16.5 (3.1)
SES			
Low	18.2 (3.4)	13.2 (4.3)	15.5 (3.2)
Middle	17.4 (2.7)	12.1 (2.8)	14.8 (1.8)
High (ref)	14.3 (2.6)	15.1 (3.8)	14.7 (2.8)
Cultural background			
English-speaking (ref)	16.0 (1.8)	13.0 (2.1)	14.5 (1.6)
European	14.5 (14.5)	**49.1 (24.8) a**	**39.8 (17.0) a**
Middle Eastern	28.2 (7.6)	8.2 (5.7)	17.4 (4.7)
Asian	13.9 (5.7)	6.5 (4.1)	9.7 (3.7)
BMI category			
Thin	12.9 (5.6)	5.8 (3.5)	9.7 (3.8)
Healthy weight (ref)	18.9 (2.2)	15.1 (2.7)	17.0 (2.0)
Overweight	12.8 (3.6)	11.0 (3.5)	11.9 (2.5)
Obese	11.4 (5.4)	12.8 (7.6)	12.1 (5.2)

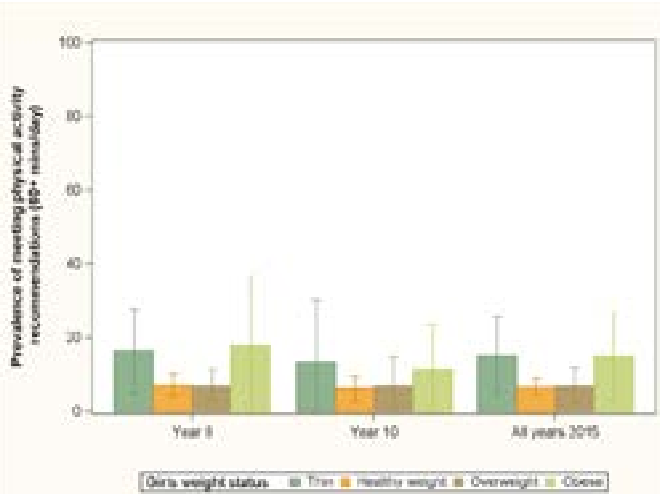
a *Indicates statistically significant difference at $P < 0.05$. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

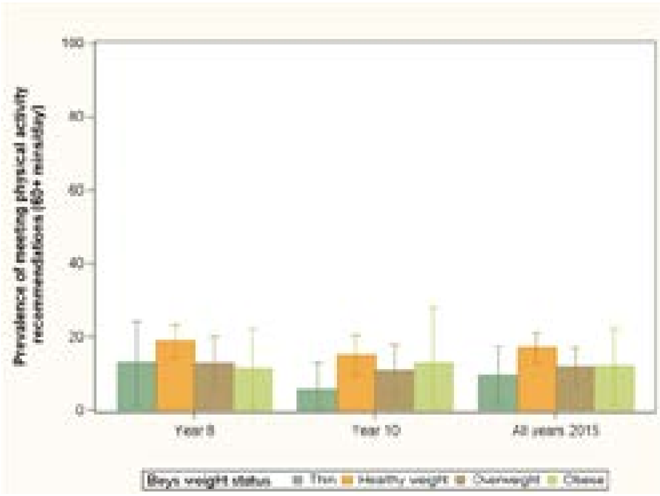
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 8.12 Prevalence of meeting the physical activity recommendation among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)




Prevalence of meeting physical activity recommendations (60+ mins/day)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of meeting physical activity recommendations (60+ mins/day)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

AWARENESS OF PHYSICAL ACTIVITY RECOMMENDATION AMONG ADOLESCENTS

In 2004, the Commonwealth Department of Health and Ageing released Australia's first physical activity recommendation for adolescents. In 2012, the Guideline Development Committee recommended that the *Australian Physical Activity Guidelines for Adolescents and Young People* should be updated every five years. The review in 2012 recommended the same physical activity prescription (i.e., at least 60 minutes daily of moderate to vigorous physical activity (MVPA)) but separating the guidelines to reflect the two developmental stages of childhood (5-12 year olds[10]) and adolescence (13-18 year olds[11]), and rebranded the guidelines as '*Make your move – Sit less - Be active for Life*'.[33]

Adolescents' awareness and knowledge of the daily physical activity recommendation was determined by asking '*How many minutes of physical activity are recommended for young people to participate in each day?*' The following findings present the proportion of adolescents who reported '60 minutes per day' and the proportion who reported 'Don't know'. Information regarding the prevalence of 'correct knowledge' and 'those who don't know' will indicate the reach that current public health promotion campaigns have in the broader population.

Table 8.15 and Figure 8.13 show the prevalence of correctly stating the daily physical activity recommendation by sex and year group in 2015, and 2010 for comparison. Overall, 28% of adolescents correctly reported 60 minutes per day. The prevalence of reporting the correct physical activity recommendation significantly increased among adolescents, from 22% in 2010 to 28% in 2015; among girls, from 21% in 2010 to 29% in 2015; and among boys, from 23% in 2010 to 28% in 2015.

Table 8.15 Prevalence of correctly reporting the physical activity recommendation for secondary school adolescents by year and sex in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Correctly reported 60 minutes	27.5 (2.6)	29.1 (2.3)	28.3 (2.0)	**22.0 (1.2) b**
Did not report 60 minutes	72.5 (2.6)	70.9 (2.3)	71.7 (2.0)	78.0 (1.2)
GIRLS				
Correctly reported 60 minutes	26.7 (3.5)	30.8 (3.1)	28.8 (2.7)	**21.4 (1.8) b**
Did not report 60 minutes	73.3 (3.5)	69.2 (3.1)	71.2 (2.7)	78.6 (1.8)
BOYS				
Correctly reported 60 minutes	28.4 (2.8)	27.4 (3.1)	27.9 (2.3)	**22.7 (1.4) b**
Did not report 60 minutes	71.6 (2.8)	72.6 (3.1)	72.1 (2.3)	77.3 (1.4)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 8.13 Prevalence of correctly reporting the physical activity recommendation for adolescents by year and sex in 2015 (%, 95%CI)

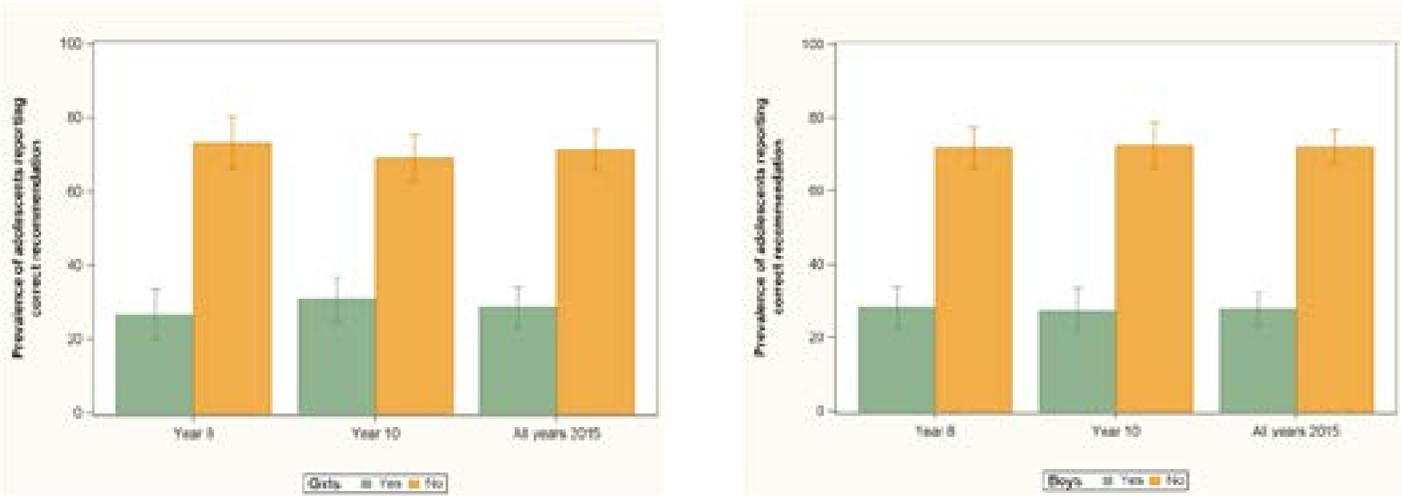


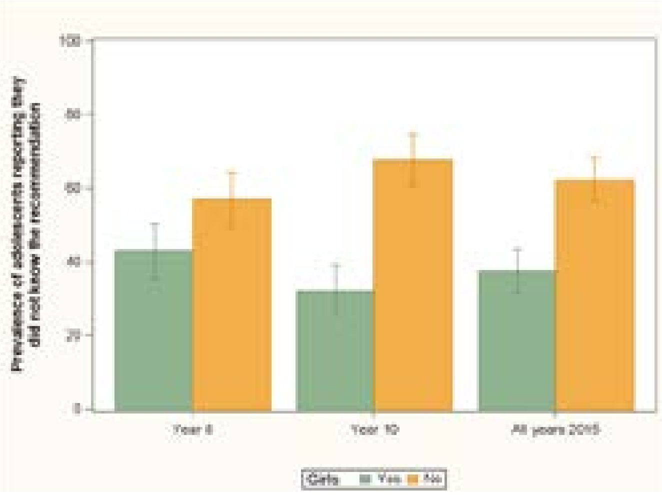
Table 8.16 and Figure 8.14 show the prevalence of not knowing the daily physical activity prescription in adolescents by sex and year group in 2015, and 2010 for comparison. Overall, 41% of adolescents did not know the physical activity recommendation, and the prevalence was significantly lower among girls (38%), compared with boys (45%). Overall, the prevalence has significantly increased among adolescents, from 31% in 2010 to 41% in 2015; among girls, from 30% in 2010 to 38% in 2015; and among boys, from 31% in 2010 to 45% in 2015.

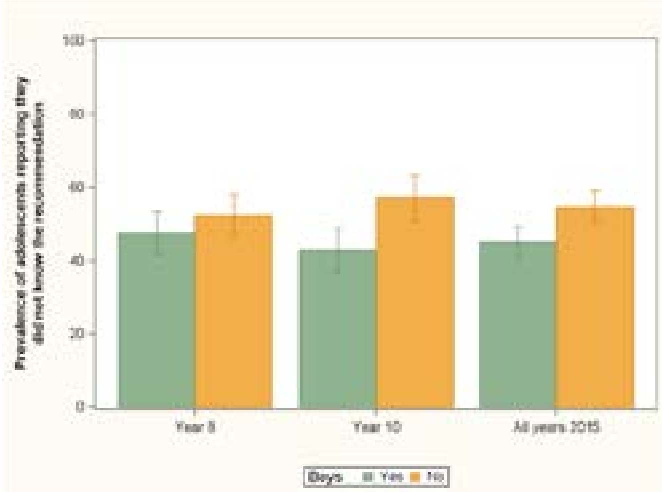
Table 8.16 Prevalence of not knowing the physical activity recommendation for secondary school adolescents by year and sex in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Did not know the recommendation	45.3 (2.4)	37.5 (2.4)	41.4 (1.9)	**30.8 (1.6) b**
GIRLS				
Did not know the recommendation	43.0 (3.7)	**32.2 (3.4) a**	**37.6 (2.9) a**	**30.4 (2.0) b**
BOYS				
Did not know the recommendation	47.6 (2.8)	42.8 (3.0)	45.2 (2.1)	**31.1 (2.0) b**

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 8.14 Prevalence of not knowing the physical activity recommendation for secondary school adolescents by year and sex in 2015 (%, 95%CI)





INDICATORS OF HEALTH-RELATED FITNESS

Health-related physical fitness refers to components of fitness that have a relationship with health and include cardiorespiratory fitness and musculoskeletal fitness.[12] In school-based surveys, health-related physical fitness can be measured objectively through validated, field-based tests that are low in cost, have minimal equipment requirements, and can be administered in large groups.

CARDIORESPIRATORY FITNESS

Cardiorespiratory fitness, or aerobic fitness, or maximal aerobic power (VO_{2max}), is the ability of the circulatory and respiratory systems to supply oxygen to skeletal muscles during sustained physical activity. Cardiorespiratory fitness is in part genetically determined, but it can be greatly influenced by environmental and behavioural factors.[13] Cardiorespiratory fitness is considered a physiological state, not a behaviour, and can be conceptualised as an attribute of physical activity.[4]

There are good reasons why adolescents need to develop and maintain cardiorespiratory fitness. A fit child is more likely to be a fit adolescent[14] and there is some evidence that aerobic fitness tracks from childhood into adulthood.[15, 16] Further, there is emerging evidence that suggests cardiorespiratory fitness is also positively related to academic performance (mathematics, reading and overall performance) in adolescents.[34, 35]

The most common and practical field-based fitness test of cardiorespiratory endurance is the 20 metre shuttle run test (20MSRT), which is sometimes referred to as the 'beep' or 'PACER' test. The 20MSRT is a standardised, health-related, criterion-referenced test, which assesses the minimum level of cardiorespiratory fitness that protects against the diseases that result from inactivity or sedentary living.[19] Briefly, the 20MSRT requires students to run a 20 metre distance at progressively faster speeds (i.e., increments at 0.5 km/hr each minute), until they reach volitional fatigue. The number of laps completed provides an estimate of aerobic capacity (VO_{2max})[20] and is considered by the World Health Organisation as the single best indicator of cardiorespiratory fitness.[21]

For SPANS, cardiorespiratory fitness was assessed by the 20MSRT. The level and shuttle attained by each adolescent were converted to the number of laps completed. The number of laps were used to categorise students in the 'healthy fitness zone' (HFZ) or 'needs improvement zone' (NIZ) according to the age- and sex- adjusted criterion-referenced standards developed by the Cooper Institute for Aerobics Research.[19] As adolescents age, they need to be able to run more laps in order to achieve the HFZ in aerobic capacity, and because boys tend to have greater muscle mass, they need to complete more laps than girls of the same age. For example, in Year 8 boys must complete 41 laps to have achieve the HFZ for cardiorespiratory fitness, while girls need to complete 23 laps.

This section reports the prevalence of achieving the HFZ for cardiorespiratory fitness in adolescent by sex and year group in 2015, and 2010 for comparison.

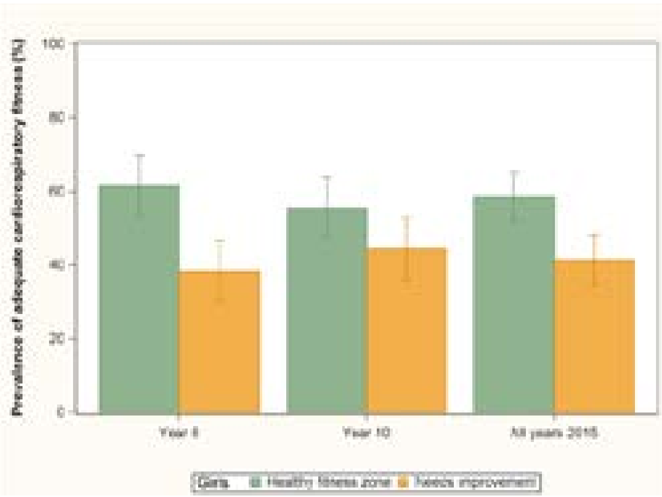
Table 8.17 and Figure 8.15 show the prevalence of achieving the HFZ for cardiorespiratory fitness among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 59% of adolescents were in the HFZ for cardiorespiratory fitness. There were no significant differences between boys and girls or changes in the proportion of adolescents in the HFZ for cardiorespiratory fitness between 2010 and 2015.

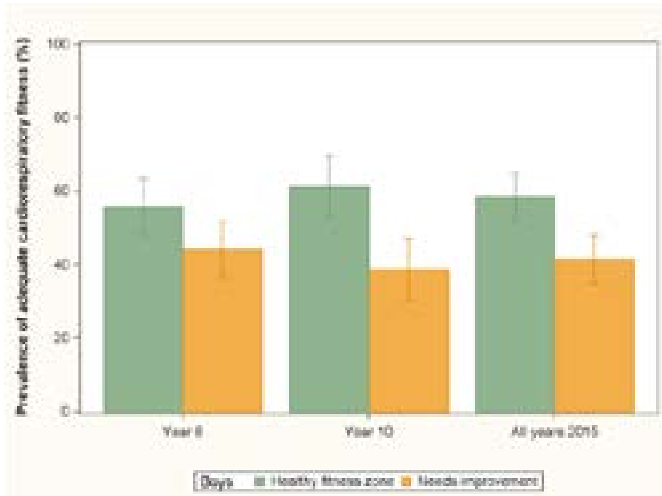
Table 8.17 Prevalence of HFZ for cardiorespiratory fitness among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Healthy fitness zone	58.6 (3.2)	58.4 (3.4)	58.5 (2.8)	65.3 (2.5)
Needs improvement	41.4 (3.2)	41.6 (3.4)	41.5 (2.8)	34.7 (2.5)
GIRLS				
Healthy fitness zone	61.6 (4.0)	55.5 (4.2)	58.5 (3.4)	66.3 (3.3)
Needs improvement	38.4 (4.0)	44.5 (4.2)	41.5 (3.4)	33.7 (3.3)
BOYS				
Healthy fitness zone	55.8 (3.8)	61.2 (4.2)	58.5 (3.3)	64.3 (2.7)
Needs improvement	44.2 (3.8)	38.8 (4.2)	41.5 (3.3)	35.7 (2.7)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 8.15 Prevalence of HFZ for cardiorespiratory fitness among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that three in five (59%) adolescents in secondary school achieved the HFZ for cardiorespiratory fitness. Table 8.18 and Figure 8.16 show the prevalence of HFZ for cardiorespiratory fitness among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015 and 2010 for comparison.

Locality

2015: Overall, the prevalence of the HFZ for cardiorespiratory fitness was significantly higher among girls from rural areas (69%), compared with girls from urban areas (55%).

Change between 2010-2015: Overall, the prevalence of the HFZ for cardiorespiratory fitness significantly decreased among adolescents from urban areas, from 66% in 2010 to 57% in 2015; and among girls from urban areas, from 68% in 2010 to 55% in 2015.

Socio-economic status

2015: Overall, the prevalence of the HFZ for cardiorespiratory fitness was significantly lower among adolescents from low SES (52%), compared with adolescents from high SES (66%) backgrounds; and among boys from low SES (50%), compared with boys from high SES (67%) backgrounds.

Change between 2010-2015: Overall, the prevalence of the HFZ for cardiorespiratory fitness significantly decreased among adolescents from high SES backgrounds, from 77% in 2010 to 66% in 2015; and among girls from high SES backgrounds, from 78% in 2010 to 65% in 2015.

Cultural background

2015: Overall, the prevalence of the HFZ for cardiorespiratory fitness was significantly lower among adolescents from Middle Eastern (39%) and Asian cultural backgrounds (40%), compared with adolescents from English-speaking backgrounds (61%). The prevalence was significantly lower among girls from Middle Eastern (37%) and Asian (35%) cultural backgrounds, compared with girls from English-speaking backgrounds (63%); and among boys from Middle Eastern cultural backgrounds (41%), compared with boys from English-speaking backgrounds (60%).

Change between 2010-2015: Overall, the prevalence of HFZ for cardiorespiratory fitness significantly decreased among adolescents from Asian cultural backgrounds, from 66% in 2010 to 40% in 2015; and among girls from Asian cultural backgrounds, from 68% in 2010 to 35% in 2015.

Weight status

2015: Overall, the prevalence of the HFZ for cardiorespiratory fitness was significantly lower among adolescents in the overweight (37%) and obese (11%) BMI categories, compared with adolescents in the healthy weight BMI category (69%). The prevalence was significantly lower among girls in the overweight (38%) and obese (12%) BMI categories, compared with girls in the health weight BMI category (68%); and among boys in the overweight (37%) and obese (9%) BMI categories, compared with boys in the health weight BMI category (70%).

Change between 2010-2015: The prevalence of HFZ for cardiorespiratory fitness significantly decreased among adolescents in the overweight BMI category, from 47% in 2010 to 37% in 2015; and among adolescents in the obese BMI category, from 21% in 2010 to 11% in 2015.

Table 8.18 Prevalence of achieving the HFZ for cardiorespiratory fitness among adolescents in secondary school stratified by sex, year group, socio-demographic characteristics, and BMI category in 2015 and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Locality				
Urban (ref)	56.9 (3.9)	57.7 (4.3)	57.3 (3.6)	**66.3 (3.1) b**
Rural	63.2 (5.0)	60.2 (4.6)	61.7 (3.8)	61.7 (3.3)
SES				
Low	**51.0 (5.3) a**	52.8 (4.5)	**51.9 (4.5) a**	56.3 (3.5)
Middle	59.1 (4.2)	57.5 (4.7)	58.3 (3.4)	61.3 (3.3)
High (ref)	66.1 (4.1)	65.5 (6.7)	65.8 (4.4)	**76.9 (3.0) b**
Cultural background				
English-speaking (ref)	61.1 (2.8)	61.5 (3.3)	61.3 (2.5)	66.2 (2.4)
European	64.7 (11.4)	53.9 (18.0)	59.1 (9.3)	62.5 (6.9)
Middle Eastern	**34.3 (7.8) a**	44.9 (11.4)	**39.1 (7.3) a**	45.1 (8.2)
Asian	**41.2 (8.1) a**	**39.7 (6.6) a**	**40.3 (6.0) a**	**65.9 (5.8) b**
BMI category				
Thin	70.0 (5.7)	62.5 (7.1)	66.6 (4.3)	68.8 (4.1)
Healthy weight (ref)	69.5 (3.2)	68.6 (3.1)	69.0 (2.6)	72.7 (2.4)
Overweight	**36.2 (3.4) a**	**38.7 (4.9) a**	**37.4 (3.1) a**	**46.9 (3.6) b**
Obese	**10.8 (4.5) a**	**10.2 (3.9) a**	**10.5 (3.1) a**	**20.5 (4.2) b**
GIRLS				
Locality				
Urban (ref)	59.1 (4.9)	50.9 (5.1)	55.0 (4.0)	**67.6 (3.8) b**
Rural	68.8 (5.7)	**69.2 (3.9) a**	**69.0 (4.1) a**	62.2 (5.6)
SES				
Low	**53.5 (6.2) a**	54.8 (4.9)	54.2 (5.0)	55.4 (5.2)
Middle	**59.6 (5.3) a**	53.1 (4.5)	56.3 (3.7)	63.6 (4.4)
High (ref)	71.8 (4.7)	58.4 (9.8)	65.0 (6.2)	**77.8 (3.5) b**
Cultural background				
English-speaking (ref)	65.1 (3.5)	60.0 (4.0)	62.6 (3.0)	67.7 (3.2)
European	67.1 (12.5)	44.0 (25.3)	58.8 (11.2)	63.4 (10.3)
Middle Eastern	**42.9 (7.5) a**	28.7 (16.8)	**37.2 (7.1) a**	43.6 (8.4)
Asian	**36.4 (7.1) a**	**33.9 (9.1) a**	**34.9 (6.0) a**	**67.6 (6.0) b**
BMI category				
Thin	74.8 (6.2)	59.6 (9.0)	68.2 (4.8)	70.3 (5.6)
Healthy weight (ref)	70.1 (4.0)	66.6 (3.7)	68.3 (3.2)	73.2 (3.3)
Overweight	**45.0 (5.5) a**	**30.6 (5.9) a**	**37.7 (4.5) a**	47.3 (4.4)
Obese	**13.2 (6.0) a**	**11.2 (5.8) a**	**12.2 (4.0) a**	16.6 (5.5)

	2015			2010
	Year 8	**Year 10**	**All years**	**All years**
BOYS				
Locality				
Urban (ref)	54.8 (4.5)	64.8 (5.1)	59.7 (4.1)	65.2 (3.4)
Rural	58.2 (6.8)	52.7 (6.6)	55.4 (4.9)	61.2 (2.7)
SES				
Low	48.4 (6.7)	**51.0 (6.8) a**	**49.8 (5.6) a**	57.2 (3.3)
Middle	58.6 (5.4)	61.7 (6.7)	60.1 (4.6)	59.2 (3.3)
High (ref)	60.4 (5.4)	73.7 (5.5)	66.6 (4.2)	75.9 (3.8)
Cultural background				
English-speaking (ref)	57.4 (3.7)	62.9 (4.2)	60.1 (3.0)	64.8 (2.7)
European	57.6 (25.1)	60.3 (26.5)	59.5 (17.0)	62.0 (7.8)
Middle Eastern	**26.0 (12.1) a**	55.3 (9.6)	**40.7 (9.8) a**	47.2 (11.5)
Asian	47.8 (11.4)	48.7 (9.2)	48.4 (8.7)	64.9 (7.0)
BMI category				
Thin	65.2 (8.8)	65.1 (10.4)	65.2 (6.6)	66.7 (6.4)
Healthy weight (ref)	68.9 (3.5)	70.6 (3.7)	69.8 (2.7)	72.3 (2.6)
Overweight	**28.3 (4.5) a**	**46.7 (6.9) a**	**37.2 (4.0) a**	46.6 (4.5)
Obese	**8.2 (6.5) a**	**9.3 (5.6) a**	**8.7 (4.7) a**	22.8 (5.3)

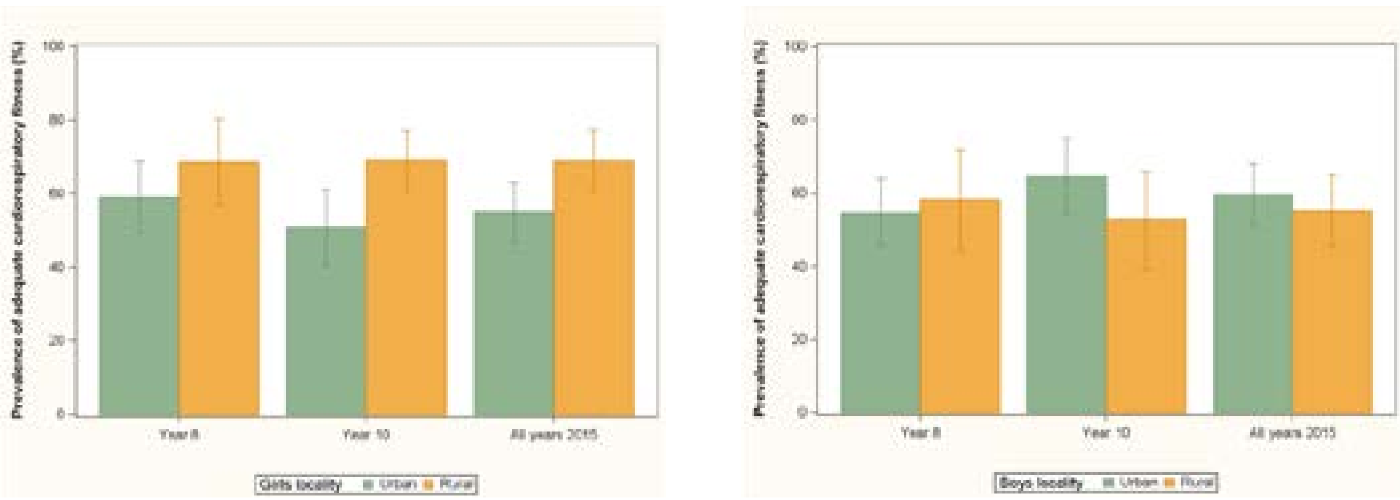
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

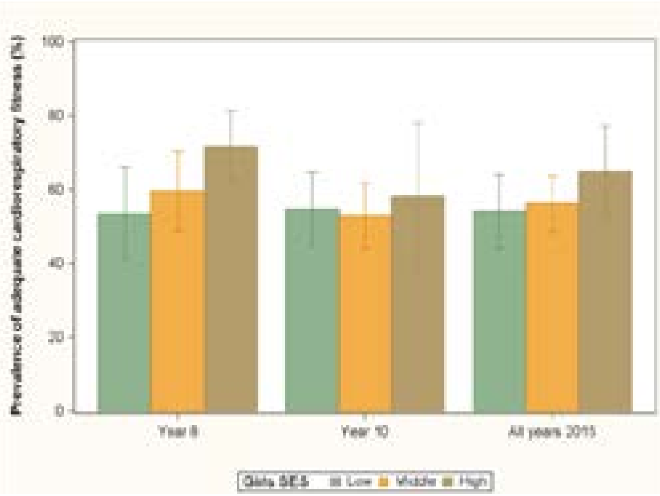
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

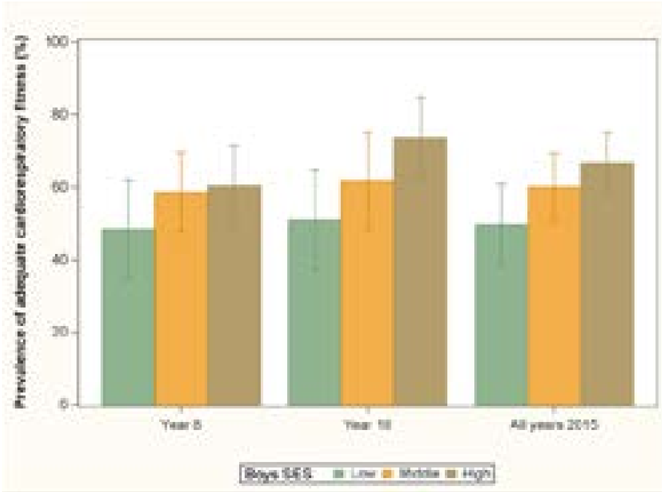
na *Indicates statistical significance could not be calculated due to low numbers.*

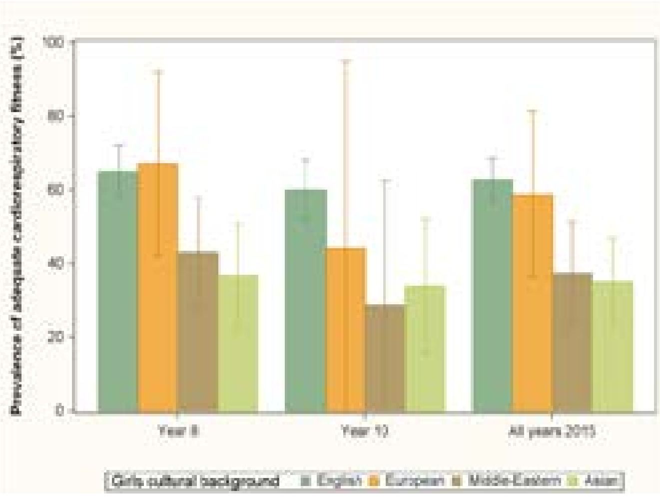
No letter means there was no statistical difference.

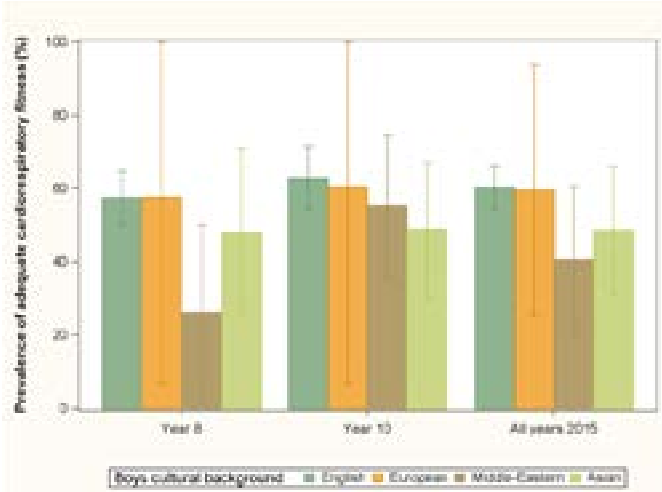
Figure 8.16 Prevalence of HFZ for cardiorespiratory fitness among adolescents in secondary school stratified by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

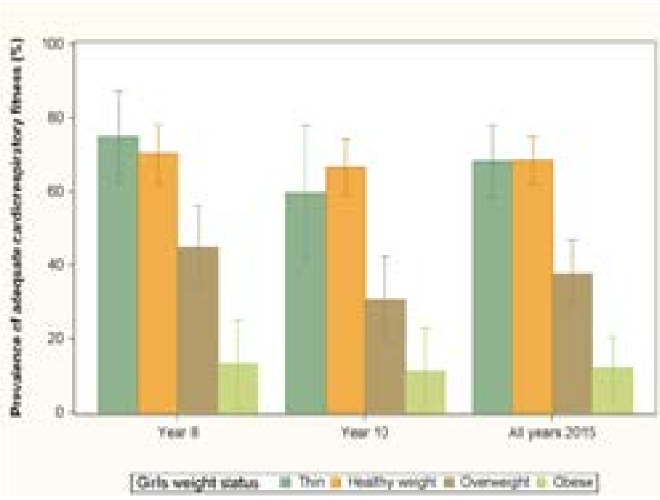


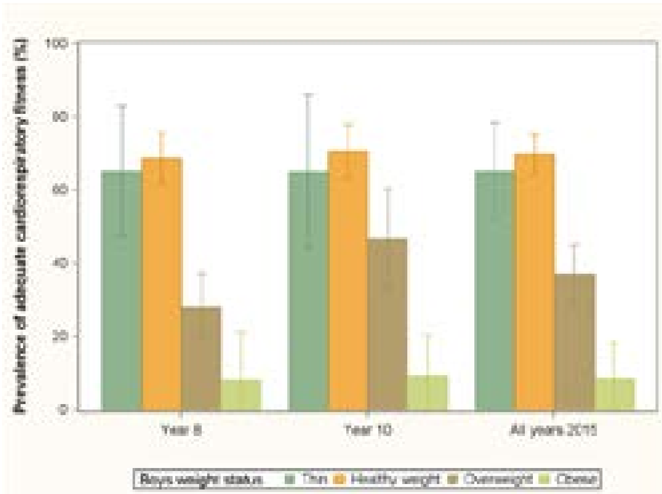

Prevalence of adequate cardiorespiratory fitness (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Prevalence of adequate cardiorespiratory fitness (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Prevalence of adequate cardiorespiratory fitness (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of adequate cardiorespiratory fitness (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of adequate cardiorespiratory fitness (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of adequate cardiorespiratory fitness (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

MULTI-STAGE SHUTTLE RUN TEST (20MSRT) DISTRIBUTIONS

Table 8.19 shows the percentile distributions, median, mean and standard deviations for lap numbers on the 20MSRT by sex and year group. Centile charts are useful to show the position of a measured parameter (e.g., the number of laps) within a statistical distribution. They do not show if that parameter is normal or abnormal, rather how that value compares with that measurement in other individuals.

In 2015, among boys in Years 8 and 10, the median number of laps completed was 42 and 57, respectively. Among girls in Years 8 and 10, the median number of laps completed was 28 and 25, respectively.

Table 8.19 Lap centiles (number) on the 20MSRT by sex and Year group

CENTILE	BOYS		GIRLS	
	Year 8	Year 10	Year 8	Year 10
5	11.0	14.0	8.0	0.0
10	15.0	24.0	12.0	8.0
15	18.0	32.0	13.0	11.0
20	22.0	34.0	15.0	13.0
25	25.0	37.0	16.0	16.0
30	29.0	42.0	18.0	17.0
35	33.0	46.0	20.0	19.0
40	35.0	51.0	23.0	20.0
45	38.0	54.0	26.0	23.0
Median	42.0	57.0	28.0	25.0
55	46.0	62.0	30.0	28.0
60	52.0	66.0	31.0	33.0
65	54.0	73.0	33.0	34.0
70	58.0	74.0	36.0	38.0
75	62.0	78.0	39.0	42.0
80	69.0	84.0	43.0	46.0
85	75.0	85.0	48.0	52.0
90	84.0	90.0	53.0	56.0
95	88.0	99.0	62.0	65.0
N	42,323	41,720	40,987	41,609
Mean	45.4	57.9	29.9	29.6
Std. Dev.	25.3	26.5	17.1	20.2

MUSCULAR FITNESS

Muscular fitness, or anaerobic fitness, is the ability of muscles to undertake short-duration activities powered primarily by metabolic pathways that do not use oxygen. A recent review of muscular fitness found strong evidence for a number of health-related benefits in children. Muscular fitness was protective against total and central adiposity, cardiovascular disease, metabolic risk factors and has beneficial effects on bone health and self-esteem.[22]

Anaerobic fitness underpins most of an adolescent's daily physical activity, which is characterised typically by short bursts of activity; and many sports that young people play result in highly intermittent activity periods characterised by rapid changes between low to vigorous intensity and typically lasting less than 15 seconds.[23] Potentially, the inclusion of short-term, high-intensity intermittent training (HIIT) and resistance training in adolescent physical activity programs (including physical education lessons) may be beneficial to the health and fitness of young people,[24-26] especially given adolescents' low participation in physical activity,[27] their low levels of cardiorespiratory fitness,[28] and low mastery of fundamental movement skills.[29]

Based on the evidence that muscular fitness is associated with a range of favourable health outcomes, the revised Australian Physical Activity Guidelines for Adolescents (13-18 years) include a recommendation that adolescents '*engage in activities that strengthen muscle and bone on at least three days per week*'.[6] Hence muscular fitness was included for the first time in SPANS 2015 to determine the population prevalence of muscular fitness among NSW adolescents. There are several dimensions of muscular fitness that may be assessed (maximal isometric strength, muscular endurance, muscle power) and the most common, validated field test is the standing broad jump, which assesses lower limb explosive power.[30]

There are no criterion-referenced standards for the broad jump in adolescents, only norm-referenced standards (which are not linked to clinical outcomes). For SPANS, the age-sex adjusted 40th centile[31] of the Eurofit Physical Fitness Test Battery protocol for the standing broad jump[32] was used to assess muscular fitness, and adolescents were dichotomised as achieving the 'healthy fitness zone' (HFZ; i.e., ≥40th centile) or 'needs improvement zone' (NIZ; i.e., < 40th centile). This section reports the prevalence of achieving the HFZ for muscular fitness among adolescents by sex, year group, demographic characteristics and BMI category in 2015.

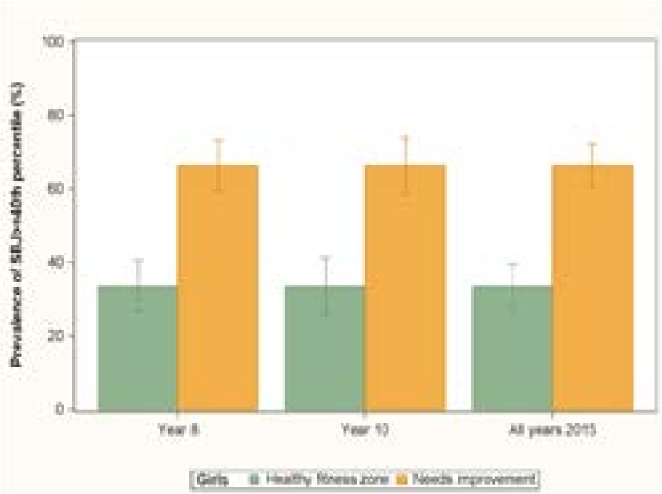
Table 8.20 and Figure 8.17 show the prevalence of HFZ for muscular fitness among adolescents by sex and year group in 2015. Overall, 35% of adolescents achieved the HFZ for muscular fitness in 2015 and there were no significant differences between boys and girls.

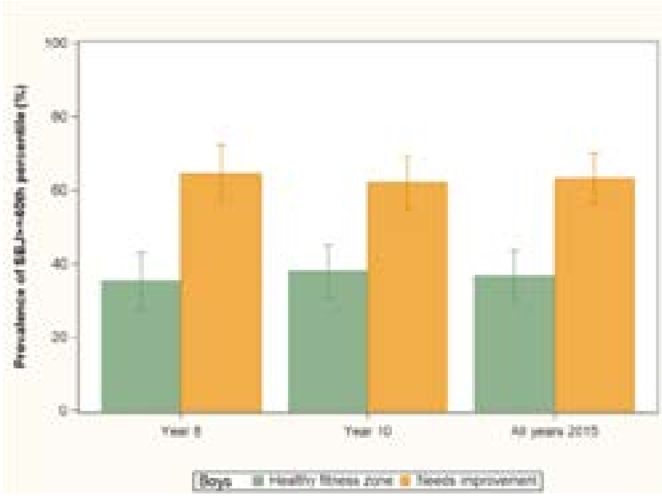
Table 8.20 Prevalence of HFZ for muscular fitness among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Healthy fitness zone	34.5 (2.8)	35.8 (2.9)	35.1 (2.5)
Needs improvement	65.5 (2.8)	64.2 (2.9)	64.9 (2.5)
GIRLS			
Healthy fitness zone	33.6 (3.4)	33.6 (3.8)	33.6 (3.0)
Needs improvement	66.4 (3.4)	66.4 (3.8)	66.4 (3.0)
BOYS			
Healthy fitness zone	35.3 (3.9)	38.0 (3.6)	36.6 (3.4)
Needs improvement	64.7 (3.9)	62.0 (3.6)	63.4 (3.4)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 8.17 Prevalence of HFZ for muscular fitness among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately one in three (35%) adolescents in secondary school achieved the HFZ for muscular fitness. Table 8.21 and Figure 8.18 show the prevalence of achieving the HFZ for muscular fitness among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: There were no significant differences in the prevalence of the HFZ for muscular fitness between adolescents from urban and rural areas.

Socio-economic status

2015: Overall, the prevalence of the HFZ for muscular fitness was significantly lower among adolescents from low SES (31%) and middle SES (31%) backgrounds, compared with adolescents from high SES (44%) backgrounds; and among girls from low SES (26%) and middle SES (28%), compared with girls from high SES (46%) backgrounds.

Cultural background

2015: Overall, the prevalence of achieving the HFZ for muscular fitness was significantly lower among adolescents from European cultural backgrounds (13%), compared with adolescents from English-speaking backgrounds (36%). The prevalence was significantly lower among girls from Asian cultural backgrounds (25%), compared with girls from English-speaking backgrounds (35%); and among boys from European cultural backgrounds (4%), compared with boys from English-speaking backgrounds (36%).

Weight status

2015: Overall, the prevalence of the HFZ for muscular fitness was significantly lower among adolescents in the overweight (22%) and obese (8%) BMI categories, compared with adolescents in the healthy weight BMI category (41%). The prevalence was significantly lower among girls in the overweight (25%) and obese BMI category (7%), compared with girls in the healthy weight BMI category (38%); and among boys in the overweight (18%) and obese (10%) BMI categories, compared with boys in the healthy weight BMI category (45%).

Table 8.21 Prevalence of HFZ for muscular fitness among adolescents in secondary school stratified by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

	2015		
	Year 8	**Year 10**	**All years**
ALL			
Locality			
Urban (ref)	36.8 (3.1)	38.0 (3.1)	37.4 (2.7)
Rural	28.2 (4.8)	30.2 (5.4)	29.2 (4.7)
SES			
Low	31.1 (4.0)	**31.1 (4.9) a**	**31.1 (4.0) a**
Middle	**29.7 (3.5) a**	**31.9 (3.7) a**	**30.8 (3.1) a**
High (ref)	42.3 (5.0)	45.0 (4.6)	43.6 (4.2)
Cultural background			
English-speaking (ref)	34.9 (3.1)	36.7 (3.2)	35.8 (2.8)
European	**14.3 (6.8) a**	**11.7 (6.2) a**	**13.0 (5.4) a**
Middle Eastern	34.6 (4.5)	38.9 (11.5)	36.6 (5.9)
Asian	32.4 (4.6)	31.7 (4.3)	32.0 (3.4)
BMI category			
Thin	44.0 (5.9)	40.4 (6.7)	42.4 (4.9)
Healthy weight (ref)	41.5 (3.2)	41.1 (3.3)	41.3 (2.9)
Overweight	**17.7 (2.7) a**	**25.3 (3.7) a**	**21.5 (2.6) a**
Obese	**8.5 (3.9) a**	**8.3 (4.2) a**	**8.4 (3.0) a**
GIRLS			
Locality			
Urban (ref)	36.3 (3.8)	35.8 (4.6)	36.1 (3.5)
Rural	25.8 (6.0)	27.1 (5.4)	26.5 (4.3)
SES			
Low	**25.4 (3.9) a**	**26.8 (5.4) a**	**26.1 (3.8) a**
Middle	31.4 (5.2)	**25.3 (4.0) a**	**28.3 (3.2) a**
High (ref)	44.2 (5.3)	48.0 (6.0)	46.1 (4.3)
Cultural background			
English-speaking (ref)	34.7 (3.9)	35.6 (4.1)	35.2 (3.2)
European	19.0 (8.6)	21.7 (12.0)	20.0 (7.6)
Middle Eastern	32.5 (10.3)	30.9 (13.6)	31.9 (7.9)
Asian	27.2 (6.0)	**23.7 (5.1) a**	**25.1 (3.8) a**
BMI category			
Thin	46.2 (8.3)	30.7 (9.2)	39.5 (6.8)
Healthy weight (ref)	37.8 (4.2)	38.1 (4.3)	38.0 (3.4)
Overweight	**22.2 (3.2) a**	27.9 (5.8)	**25.1 (3.7) a**
Obese	**12.5 (6.5) a**	na	**6.7 (3.7) a**

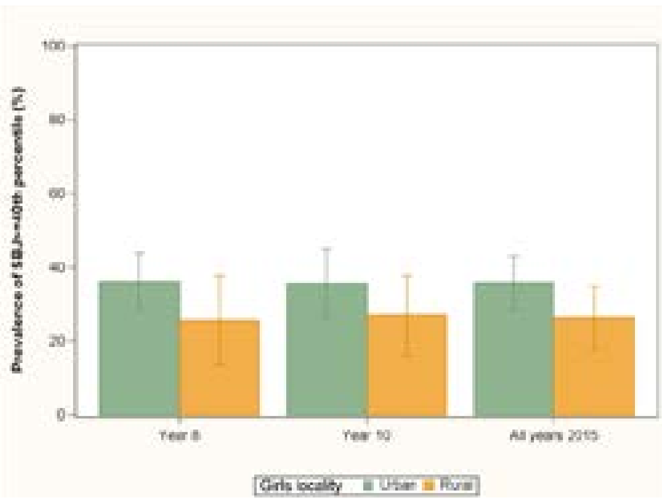
	2015		
	Year 8	**Year 10**	**All years**
BOYS			
Locality			
Urban (ref)	37.2 (4.7)	40.2 (4.0)	38.7 (4.1)
Rural	30.3 (5.4)	32.8 (7.3)	31.6 (5.6)
SES			
Low	37.1 (5.1)	35.1 (5.8)	36.1 (5.0)
Middle	28.2 (3.8)	38.1 (5.7)	33.1 (3.9)
High (ref)	40.3 (7.6)	41.6 (5.7)	40.9 (6.3)
Cultural background			
English-speaking (ref)	35.0 (4.0)	37.8 (4.1)	36.4 (3.7)
European	na	**5.5 (5.5) a**	**4.0 (4.1) a**
Middle Eastern	36.6 (5.5)	44.1 (13.8)	40.3 (7.8)
Asian	39.7 (7.2)	44.3 (9.3)	42.3 (6.4)
BMI category			
Thin	41.8 (9.1)	48.8 (9.5)	45.1 (7.7)
Healthy weight (ref)	45.1 (4.1)	44.2 (4.2)	44.6 (3.8)
Overweight	**13.7 (4.2) a**	**22.7 (4.8) a**	**18.0 (3.6) a**
Obese	**4.1 (2.9) a**	**15.9 (7.4) a**	**10.1 (4.2) a**

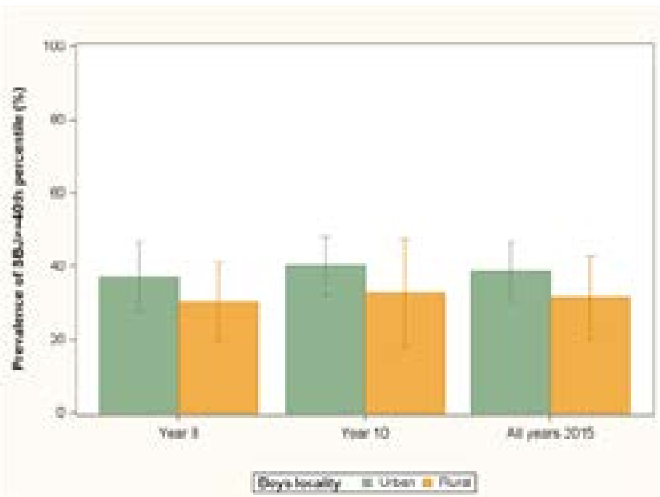
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

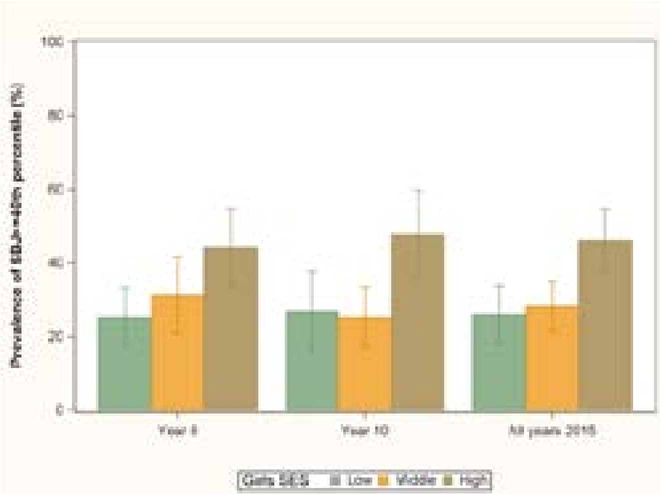
na *Indicates statistical significance could not be calculated due to low numbers.*

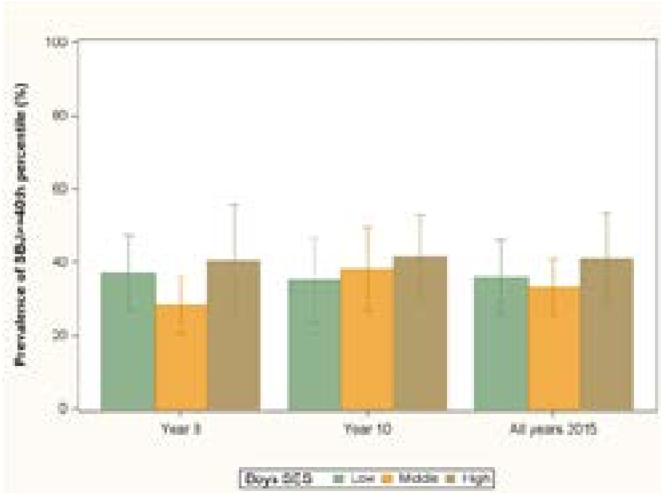
No letter means there was no statistical difference.

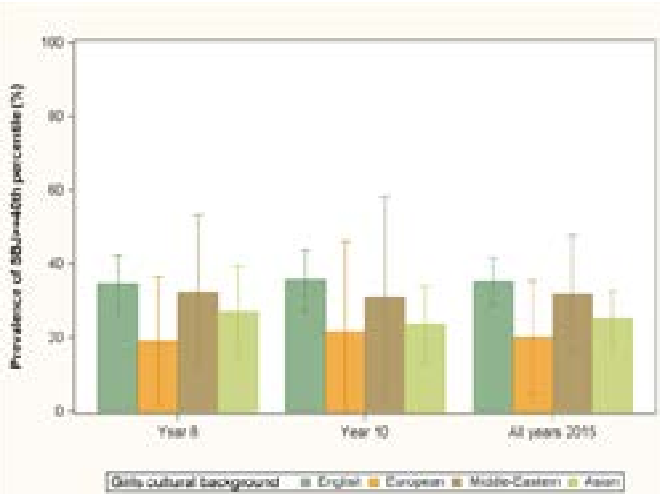
Figure 8.18 Prevalence of HFZ for muscular fitness among adolescents in secondary school stratified by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

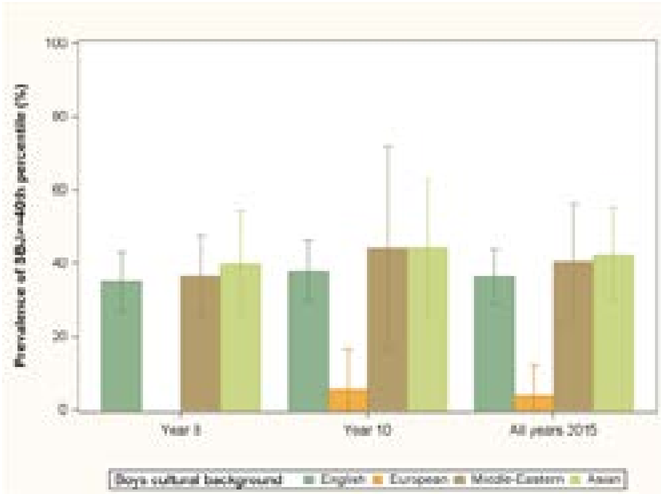


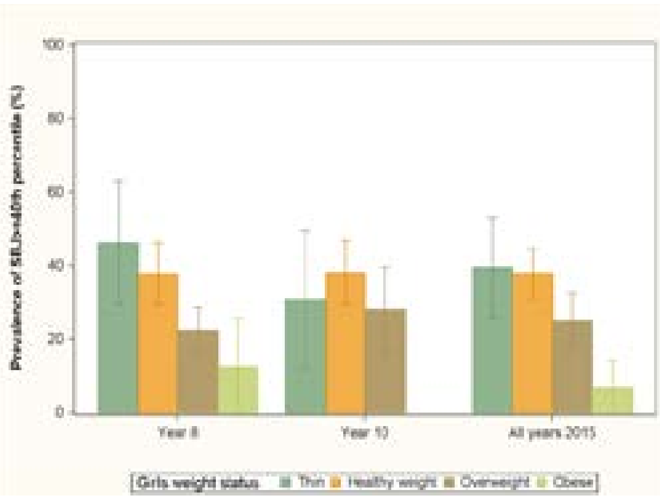


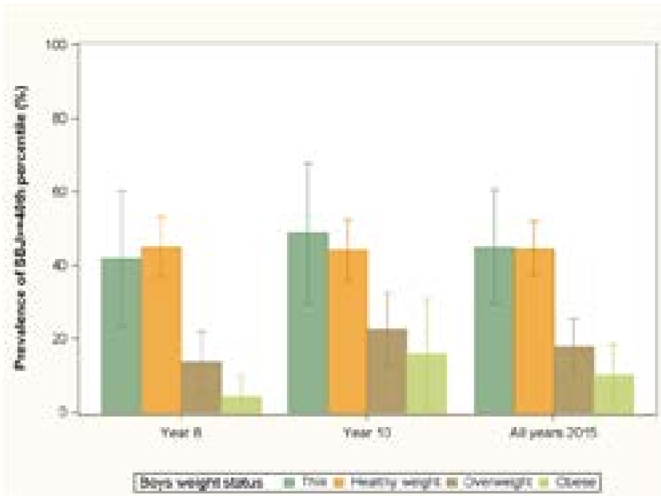

Prevalence of SBJ>=40th percentile (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Prevalence of SBJ>=40th percentile (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Prevalence of SBJ>=40th percentile (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of SBJ>=40th percentile (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of SBJ>=40th percentile (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of SBJ>=40th percentile (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

STANDING BROAD JUMP DISTRIBUTIONS

Table 8.22 shows the percentile distributions, median, mean and standard deviations for the distance measured of the standing broad jump (cm) by sex and year group. Centile charts are useful to show the position of a measured parameter (e.g., the distance jumped) within a statistical distribution. They do not show if that parameter is normal or abnormal, rather, how that value compares with that measurement in other individuals.

Among boys in Years 8 and 10, the median standing broad jump was 158.4 cm and 182.2 cm, respectively. Among girls in Years 8 and 10, the median standing broad jump was 139.0 cm and 144.2 cm, respectively.

Table 8.22 Standing broad jump (cm) centiles by sex and year group

CENTILE	BOYS		GIRLS	
	Year 8	Year 10	Year 8	Year 10
5	110.0	121.9	99.6	92.4
10	122.0	138.4	109.1	108.0
15	131.8	149.6	114.6	114.6
20	136.0	155.4	119.0	121.7
25	140.4	160.3	124.2	125.8
30	143.7	165.0	128.0	130.4
35	148.3	169.6	131.0	133.6
40	151.2	174.5	133.5	137.2
45	155.0	179.2	136.7	140.0
Median	158.4	182.2	139.0	144.2
55	162.4	186.0	142.1	149.6
60	165.1	189.2	146.2	153.0
65	168.6	191.8	149.8	156.8
70	174.2	195.4	152.4	159.8
75	179.1	200.0	157.4	162.0
80	185.0	206.1	161.8	166.0
85	189.6	210.2	167.0	170.2
90	199.0	215.3	172.3	176.8
95	213.2	225.0	181.5	185.2
N	41,944	41,232	40,487	39,508
Mean	159.9	179.4	140.0	144.3
Std. Dev.	30.1	31.0	25.0	29.8

SUMMARY OF THE PHYSICAL ACTIVITY & FITNESS LEVELS OF ADOLESCENTS IN SECONDARY SCHOOL

The table below summarises the prevalence of indicators of physical activity and fitness (cardiorespiratory and muscular) in adolescents in secondary school.

Physical activity indicator	Australian guidelines	SPANS benchmark	Prevalence (%, 95%CI)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
Physical activity participation	Adolescents age 13 to 18 years should participate in *at least 60 minutes every day of moderate to vigorous physical activity*	≥60mins spent in moderate to vigorous physical activity every day[10]	n/a	11.5%	**2015:** Overall, the proportion of adolescents meeting the physical activity recommendation was significantly lower among adolescents from Asian cultural backgrounds
Know the physical activity recommendation for adolescents age 13-18 years		60 minutes a day	22.0%	28.3%[sig]	**2015:** Subgroup differences were not assessed **Change between 2010-15:** Overall, the proportion of adolescents who knew the physical activity recommendation significantly increased between 2010 and 2015
Cardiorespiratory fitness (20MSRT)	There are no specific guidelines	Adolescents categorised as achieved HFZ† according to the age- and sex- adjusted criterion-referenced standards for cardiorespiratory fitness[19]	65.3%	58.5%	**2015:** Overall, the proportion of adolescents achieving the HFZ in cardiorespiratory fitness was significantly lower among adolescents from low SES backgrounds, from Middle Eastern and Asian cultural backgrounds, and in the overweight and the obese BMI categories **Change between 2010-15:** Overall, there were no significant differences in achieving the HFZ in cardiorespiratory fitness between 2010 and 2015. Within subgroups, achieving the HFZ in cardiorespiratory fitness significantly decreased among adolescents from urban areas, from high SES backgrounds, from Asian cultural backgrounds, and in the overweight and obese BMI categories
Muscular fitness (Standing broad jump)	There are no specific guidelines	Adolescents categorised as achieving HFZ according to the age- and sex- adjusted 40th centile for muscular fitness[31, 32]	n/a	35.1%	**2015:** Overall, the proportion of adolescents achieving the HFZ for muscular fitness was significantly lower among adolescents from low SES and middle SES backgrounds, from European cultural backgrounds, and in the overweight and the obese BMI categories

†HFZ *healthy fitness zone*
sig *Indicates statistically significant difference at $P < 0.05$*
* *Comparisons are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category*
n/a *not assessed in 2010*

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CHAPTER 9: FUNDAMENTAL MOVEMENT SKILLS

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5 TO 16 YEARS

45%
of boys and
48%
of girls demonstrated advanced skills in the vertical jump

74%
of boys and
33%
of girls demonstrated advanced skills in the kick

2015

Primary school children

- 67% of boys and 53% of girls demonstrated advanced skills in the catch
- 54% of boys and 16% of girls demonstrated advanced skills in the kick
- 52% of boys and 18% of girls demonstrated advanced skills in the over-arm throw
- 75% of boys and 80% of girls demonstrated advanced skills in the side gallop
- 45% of boys and 48% of girls demonstrated advanced skills in the vertical jump
- 24% of boys and 49% of girls demonstrated advanced skills in the leap
- 52% of boys and 43% of girls demonstrated advanced skills in the sprint run

Secondary school adolescents

- 87% of boys and 74% of girls demonstrated advanced skills in the catch
- 74% of boys and 33% of girls demonstrated advanced skills in the kick
- 67% of boys and 30% of girls demonstrated advanced skills in the over-arm throw
- 93% of boys and 93% of girls demonstrated advanced skills in the side gallop
- 74% of boys and 67% of girls demonstrated advanced skills in the vertical jump
- 34% of boys and 54% of girls demonstrated advanced skills in the leap
- 70% of boys and 55% of girls demonstrated advanced skills in the sprint run

SIGNIFICANT CHANGES BETWEEN 2010-2015

Primary school children

- Advanced skills in the catch increased among boys from 59% in 2010 to 67% in 2015, and among girls from 41% in 2010 to 53% in 2015
- Advanced skills in the kick increased among boys from 42% in 2010 to 54% in 2015, and among girls from 9% in 2010 to 16% in 2015
- Advanced skills in the over-arm throw increased among boys from 44% in 2010 to 52% in 2015, and among girls from 11% in 2010 to 18% in 2015
- Advanced skills in the side gallop increased among boys from 61% in 2010 to 75% in 2015, and among girls from 67% in 2010 to 80% in 2015
- Advanced skills in the vertical jump increased among boys from 32% in 2010 to 45% in 2015, and among girls from 32% in 2010 to 48% in 2015
- Advanced skills in the leap increased among boys from 13% in 2010 to 24% in 2015, and among girls from 25% in 2010 to 49% in 2015
- Advanced skills in the sprint run increased among boys from 44% in 2010 to 52% in 2015

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5 TO 16 YEARS

Advanced skills in the sprint run increased among boys from 62% in 2010 to 70% in 2015

Secondary school adolescents

- Advanced skills in the vertical jump increased among boys from 64% in 2010 to 74% in 2015, and among girls from 57% in 2010 to 67% in 2015
- Advanced skills in the leap increased among boys from 19% in 2010 to 35% in 2015
- Advanced skills in the sprint run increased among boys from 62% in 2010 to 70% in 2015

CONTEXT

All children need to be taught fundamental movement skills (FMS). FMS are the building blocks for movement. They form the foundation for many of the specific motor skills required in sports and leisure activities[1] and include activities such as running, jumping, throwing and kicking. The acquisition of FMS is developmentally sequenced[2] and contingent upon multiple internal and external factors (e.g., biological, psychological, social, motivational, cognitive) and the development of these skills occurs though a range of active play experiences and structured programs. Importantly, FMS allow children to interact and explore their environment.[3]

Children who are proficient at FMS are more likely to be physically active and have adequate cardiorespiratory fitness, and are less likely to be overweight or obese compared with children who are not proficient.[4] In addition, FMS-proficient children are more likely to become adolescents who are more active and with higher cardiorespiratory fitness levels.

The evidence shows that overall, FMS competency among NSW school age children is low and that FMS competency has declined between 2004 and 2010.[5] Children need to be taught FMS and be provided with opportunities to practise FMS through developmentally appropriate activities. It takes between 240 and 600 minutes of instruction time to master a FMS;[6] and children should demonstrate skill mastery of the less complex FMS (such as the sprint run, vertical jump, catch, side gallop and over-arm throw) by the end of Year 4, and more complex FMS (including the leap and kick) by the end of Year 5.

For SPANS, seven FMS (sprint run, vertical jump, side gallop, leap, kick, over-arm throw and catch) were assessed using the process-oriented checklists developed by the NSW Department of Education resource *Get Skilled: Get Active.*[7] These particular skills were assessed because they are the foundation for sports and games which are popular among school aged children (e.g., ball sports, dance and gymnastics) and are categorised as locomotor or object control skills.

Object control skills require a child to control an object using a part of the body or an implement. There are two types of object control skills; *propulsive* (sending an object away, e.g., throwing, kicking) and *receptive* (receiving an object, e.g., catching, dribbling a ball). Propulsive skills are easier because the child is in control of the object they send away. In contrast, receptive skills require perceptual and coordination skills to move one's body into position to receive the oncoming object. In daily living, as well as in many games and sports, there is often a need for both propulsive and receptive skills, such as throwing and catching a ball or an object.

Locomotor skills are physical actions that propel a child from one place to another; that is, the feet move the body from one place to another. This may include moving forward, backward or side to side. Examples of locomotor skills include running, jumping, galloping and skipping.

Briefly, each FMS comprises five to six components and each child is scored according to the number of components that they correctly demonstrate. Children who correctly demonstrate every component of a skill are deemed to have skill mastery and children who correctly demonstrate all but one component are deemed to have near-mastery of the skill.

This chapter reports on the prevalence of *advanced* skills, which is the combined proportion of children who demonstrate all components (i.e., mastery) and all but one component (i.e., near-mastery) for each FMS by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison. The findings are presented separately for children in primary school and adolescents in secondary school. The prevalence (%) estimates need to be interpreted along with their standard errors (SE); a large standard error means a less precise estimate.

PRIMARY SCHOOL

The following section describes the FMS proficiency of children in Years 2, 4 and 6 in primary schools participating in SPANS. A field officer assessed each child and each skill individually during the school visit.

MASTERY AND NEAR-MASTERY OF FMS

Table 9.1 and Figure 9.1 show the prevalence of mastery (demonstrates all components of skill), near-mastery (demonstrates all but one components of skill) and advanced skills (mastery + near mastery) of each of the seven FMS among children by sex and year group in 2015. Table 9.2 shows the prevalence for all year groups in 2015, and in 2010 for comparison.

CATCH

2015: Overall, the prevalence of advanced skills for the catch was significantly higher among boys (67%), compared with girls (53%).

Change between 2010-2015: Overall, the prevalence of advanced skills for the catch significantly increased among boys, from 59% in 2010 to 67% in 2015; and among girls, from 41% in 2010 to 53% in 2015.

KICK

2015: Overall, the prevalence of advanced skills for the kick was significantly higher among boys (54%), compared with girls (16%).

Change between 2010-2015: Overall, the prevalence of advanced skills for the kick significantly increased among boys, from 42% in 2010 to 54% in 2015; and among girls, from 9% in 2010 to 16% in 2015.

OVER-ARM THROW

2015: Overall, the prevalence of advanced skills for the over-arm throw was significantly higher among boys (52%), compared with girls (18%).

Change between 2010-2015: Overall, the prevalence of advanced skills for the over-arm throw significantly increased among boys, from 44% in 2010 to 52% in 2015; and among girls, from 11% in 2010 to 18% in 2015.

SIDE GALLOP

2015: Overall, the prevalence of advanced skills for the side gallop was significantly lower among boys (75%), compared with girls (80%).

Change between 2010-2015: Overall, the prevalence of advanced skills for the side gallop significantly increased among boys, from 61% in 2010 to 75% in 2015; and among girls, from 67% in 2010 to 80% in 2015.

VERTICAL JUMP

2015: Overall, there was no significant difference in the prevalence of advanced skills for the vertical jump between boys and girls.

Change between 2010-2015: Overall, the prevalence of advanced skills for the vertical jump significantly increased among boys, from 32% in 2010 to 45% in 2015; and among girls, from 32% in 2010 to 48% in 2015.

LEAP

2015: Overall, the prevalence of advanced skills for the leap was significantly lower among boys (24%), compared with girls (49%).

Change between 2010-2015: Overall, the prevalence of advanced skills for the leap significantly increased among boys, from 13% in 2010 to 24% in 2015; and among girls, from 25% in 2010 to 49% in 2015.

SPRINT RUN

2015: Overall, the prevalence of advanced skills for the sprint run was significantly higher among boys (52%), compared with girls (43%).

Change between 2010-2015: Overall, the prevalence of advanced skills for the sprint run significantly increased among boys, from 44% in 2010 to 52% in 2015.

Table 9.1 Prevalence of mastery, near-mastery and advanced skills for each FMS among children in primary school by sex and year group in 2015 (%, SE)

	Year 2				Year 4				Year 6			
	Boys		Girls		Boys		Girls		Boys		Girls	
OBJECT CONTROL SKILLS												
CATCH												
Near-mastery	20.6	2.6	18.2	2.1	19.0	1.9	22.0	1.7	22.1	2.1	23.7	2.1
Mastery	26.8	2.8	13.6	2.0	51.0	3.3	33.5	2.8	61.0	2.8	50.1	3.5
Advanced	47.4	2.9	**31.8**	**2.5 a**	70.0	2.8	**55.6**	**3.1 a**	83.2	1.9	**73.8**	**2.6 a**
KICK												
Near-mastery	16.5	2.4	3.1	0.7	16.7	1.4	8.8	1.4	18.6	1.7	13.5	1.5
Mastery	17.1	1.9	2.4	1.1	39.1	2.8	7.9	1.7	51.7	2.6	13.9	2.5
Advanced	33.7	2.8	**5.5**	**1.3 a**	55.8	2.6	**16.6**	**2.4 a**	70.3	2.8	**27.3**	**3.0 a**
OVER-ARM THROW												
Near-mastery	11.8	1.8	4.7	1.1	14.9	1.7	9.2	1.3	17.6	1.9	13.3	1.9
Mastery	18.1	2.5	3.3	0.9	38.7	2.8	9.7	1.1	53.0	3.0	13.8	1.9
Advanced	29.9	3.1	**8.0**	**1.5 a**	53.6	2.9	**18.9**	**1.9 a**	70.6	3.0	**27.0**	**2.6 a**
LOCOMOTOR SKILLS												
SIDE GALLOP												
Near-mastery	21.2	2.1	21.1	1.6	20.6	2.2	21.9	1.8	19.3	1.8	19.6	2.2
Mastery	39.3	2.3	47.5	2.5	57.6	2.9	61.0	2.9	67.4	2.2	71.0	2.8
Advanced	60.5	2.9	**68.6**	**2.9 a**	78.2	2.6	**82.8**	**2.1 a**	86.8	2.0	**90.6**	**1.8**
VERTICAL JUMP												
Near-mastery	16.3	1.8	16.1	1.7	26.0	2.2	23.4	1.8	25.3	1.6	28.0	2.2
Mastery	14.0	1.5	15.0	1.8	22.0	2.9	29.3	2.7	31.1	2.1	31.9	2.5
Advanced	30.3	2.3	31.1	2.5	48.1	2.7	52.7	3.1	56.4	2.6	59.9	3.2
LEAP												
Near-mastery	13.4	1.4	16.1	1.7	14.5	1.6	25.5	2.1	15.7	1.6	27.8	2.5
Mastery	5.1	1.0	15.0	1.8	11.0	1.7	28.4	2.3	12.2	1.7	29.8	3.0
Advanced	18.5	2.0	**31.1**	**2.5 a**	25.4	2.5	**54.0**	**2.8 a**	28.0	2.5	**57.6**	**3.7 a**
SPRINT RUN												
Near-mastery	26.1	2.3	20.1	2.4	24.2	2.4	25.8	2.3	32.1	2.4	25.0	2.0
Mastery	15.2	1.7	10.9	1.6	28.4	3.2	21.3	2.4	31.2	2.8	27.9	2.7
Advanced	41.2	3.1	**31.0**	**3.2 a**	52.6	3.1	47.1	3.0	63.3	2.6	**52.8**	**3.3 a**

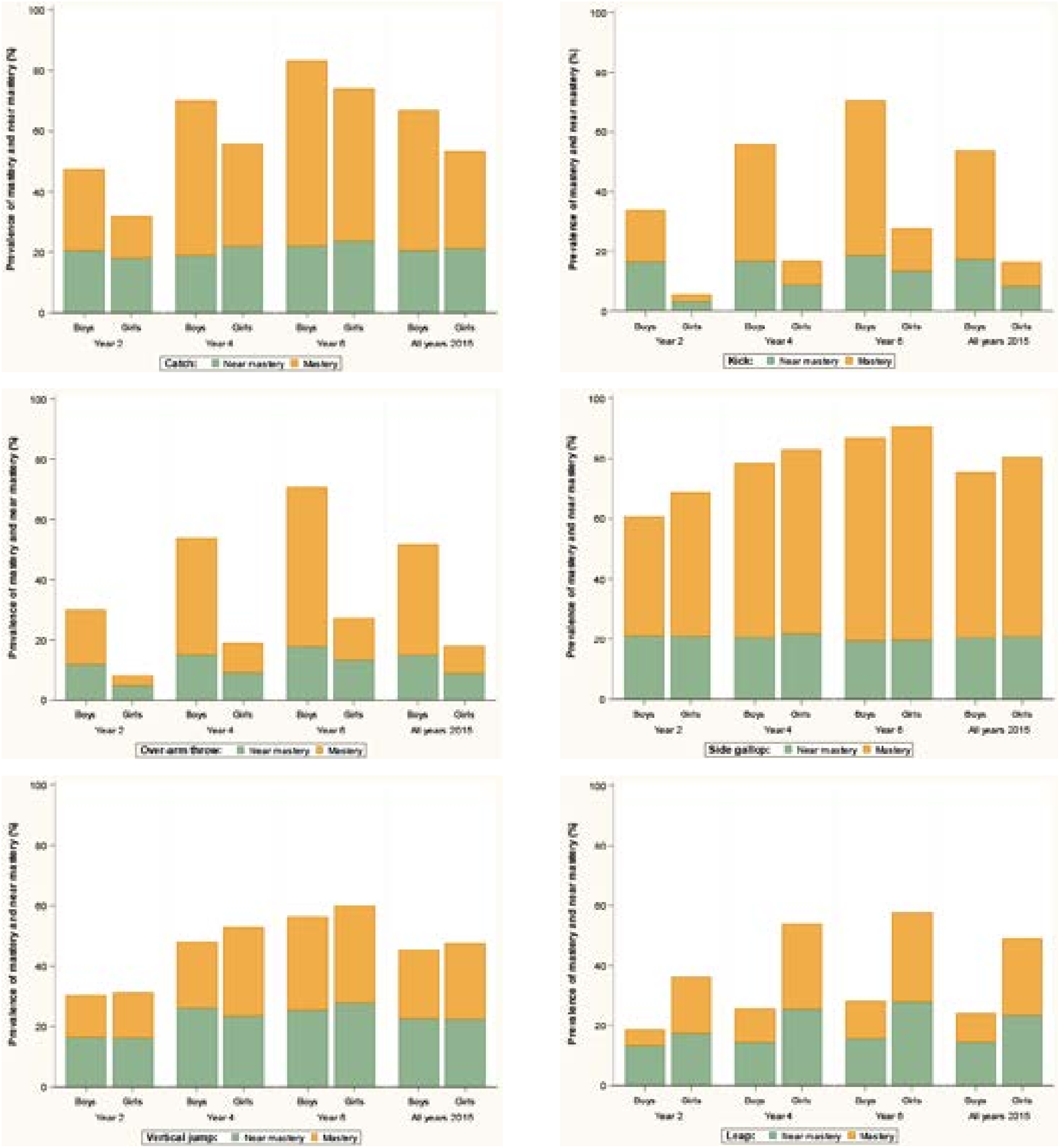
a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

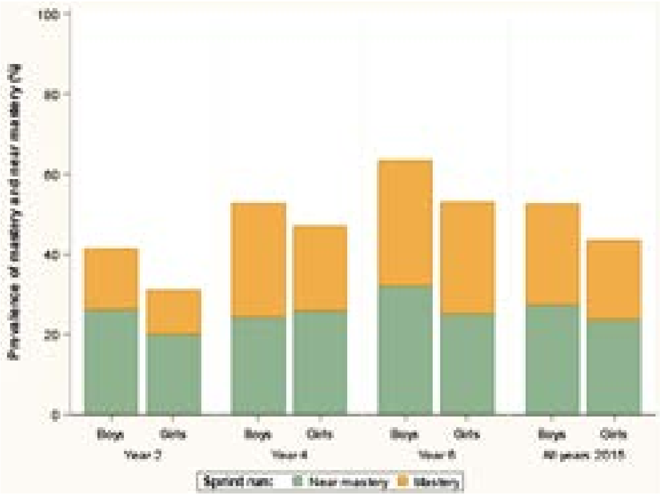
Table 9.2 Prevalence of mastery, near-mastery and advanced skills for each FMS among children in primary school by sex in 2015 and in 2010 for comparison (%, SE)

	All years 2015				All years 2010			
	Boys		Girls		Boys		Girls	
OBJECT CONTROL SKILLS								
CATCH								
Near-mastery	20.6	1.5	21.2	1.3	17.7	1.2	18.3	1.2
Mastery	46.3	2.1	32.0	2.1	41.2	2.0	23.0	1.8
Advanced	66.9	1.8	**53.2**	**1.9 a**	**58.9**	**2.3 b**	**41.2**	**2.1 b**
KICK								
Near-mastery	17.3	1.1	8.3	0.8	18.7	1.5	5.4	0.7
Mastery	36.3	1.7	8.0	1.3	23.1	1.9	3.6	0.6
Advanced	53.5	1.9	**16.3**	**1.7 a**	**41.9**	**2.5 b**	**9.0**	**1.1 b**
OVER-ARM THROW								
Near-mastery	14.8	1.4	9.0	0.9	21.0	1.7	7.6	0.8
Mastery	36.8	2.1	8.9	1.0	22.5	2.0	3.6	0.6
Advanced	51.6	2.3	**17.9**	**1.5 a**	**43.5**	**2.4 b**	**11.2**	**1.1 b**
LOCOMOTOR SKILLS								
SIDE GALLOP								
Near-mastery	20.4	1.3	20.9	1.2	31.6	1.7	34.5	1.5
Mastery	54.9	1.7	59.6	2.0	29.5	1.6	32.5	1.7
Advanced	75.3	1.8	**80.4**	**1.9 a**	**61.0**	**1.9 b**	**67.0**	**1.9 b**
VERTICAL JUMP								
Near-mastery	22.6	1.1	22.4	1.3	16.5	1.0	14.0	1.4
Mastery	22.4	1.6	25.2	1.7	15.6	1.2	17.5	1.6
Advanced	45.0	2.0	47.6	2.5	**32.1**	**1.5 b**	**31.5**	**2.3 b**
LEAP								
Near-mastery	14.6	0.9	23.5	1.3	9.3	1.1	12.0	1.0
Mastery	9.4	1.1	25.5	2.0	3.7	0.5	12.5	1.3
Advanced	24.0	1.7	**48.9**	**2.7 a**	**13.0**	**1.4 b**	**24.5**	**1.8 b**
SPRINT RUN								
Near-mastery	27.5	1.6	23.6	1.7	22.7	1.5	19.6	1.5
Mastery	25.0	2.0	19.8	1.6	21.7	1.9	18.5	1.8
Advanced	52.4	2.2	**43.4**	**2.4 a**	**44.4**	**2.7 b**	38.0	2.8

a *Indicates statistically significant difference at P < 0.05. Comparisons are between sex within year.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 9.1 Prevalence of mastery, near-mastery and advanced skills for each FMS among children in primary school by sex and year group in 2015 (%)




Prevalence of mastery and near mastery (%)
100
80
60
40
20
0
Boys
Girls
Boys
Girls
Boys
Girls
Boys
Girls
Year 2
Year 4
Year 6
All years 2015
Sprint run:
Near mastery
Mastery

SOCIO-DEMOGRAPHIC DIFFERENCES

CATCH

The current findings indicate that two in three boys (67%) and one in two girls (53%) demonstrated advanced skills in the catch. Table 9.3 and Figure 9.2 show the prevalence of advanced skills in the catch among children by sex, year group, socio-demographic characteristics, and BMI category in 2015.

Locality

2015: Overall, the prevalence of advanced skills in the catch was significantly higher among children from rural areas (64%), compared with children from urban areas (59%). The prevalence was significantly higher among rural boys (72%), compared with urban boys (65%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the catch significantly increased among children from urban areas from 51% in 2010 to 59% in 2015. The prevalence significantly increased among girls from urban areas (from 42% in 2010 to 52% in 2015), and from rural areas (from 34% in 2010 to 56% in 2015); and among boys from urban areas (from 59% in 2010 to 65% in 2015), and from rural areas (from 60% in 2010 to 72% in 2015).

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of advanced skills in the catch between children from different SES backgrounds.

Change between 2010-2015: Overall, the prevalence of advanced skills in the catch significantly increased among children from low SES backgrounds, from 43% in 2010 to 60% in 2015; and from middle SES backgrounds, from 51% in 2010 to 61% in 2015. The prevalence significantly increased among girls from low SES backgrounds, from 34% in 2010 to 53% in 2015; and from middle SES backgrounds, from 42% in 2010 to 52% in 2015. The prevalence significantly increased among boys from low SES backgrounds, from 53% in 2010 to 68% in 2015; and from middle SES backgrounds, from 59% in 2010 to 70% in 2015.

Cultural background

2015: Overall, the prevalence of advanced skills in the catch was significantly lower among girls from Middle Eastern cultural backgrounds (36%), compared with children from English-speaking backgrounds (54%); and among boys from European cultural backgrounds (43%), compared with boys from English-speaking backgrounds (68%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the catch significantly increased among children from English-speaking backgrounds, from 53% in 2010 to 61% in 2015; and children from Asian cultural backgrounds, from 36% in 2010 to 58% in 2015. The prevalence significantly increased among girls from English-speaking backgrounds (from 43% in 2010 to 54% in 2015), European cultural backgrounds (from 35% in 2010 to 66% in 2015) and Asian cultural backgrounds (from 34% in 2010 to 52% in 2015). The prevalence significantly increased among boys from English-speaking backgrounds, from 61% in 2010 to 68% in 2015; and from Asian cultural backgrounds, from 38% in 2010 to 65% in 2015.

Weight status

2015: Overall, the prevalence of advanced skills in the catch was significantly lower among children in the obese BMI category (52%), compared with children in the healthy weight BMI category (62%). The prevalence was significantly lower among boys in the obese BMI category (59%), compared with boys in the healthy weight BMI category (70%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the catch significantly increased among children in the healthy weight BMI category, from 53% in 2010 to 62% in 2015; and in the overweight BMI category, from 53% in 2010 to 61% in 2015. The prevalence significantly increased among girls in the healthy weight BMI category (from 43% in 2010 to 55% in 2015), and in the overweight BMI category (from 44% in 2010 to 56% in 2015); and among boys in the healthy weight BMI category, from 62% in 2010 to 70% in 2015.

Table 9.3 Prevalence of advanced skills for the catch among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015, and 2010 for comparison (%, SE)

CATCH	2015								2010	
	Year 2		Year 4		Year 6		All years		All years	
ALL										
Locality										
Urban (ref)	37.0	(2.8)	62.9	(3.0)	77.2	(2.5)	58.6	(2.1)	**50.8**	**(2.2) b**
Rural	**47.4**	**(2.5) a**	61.7	(1.9)	82.6	(2.6)	**64.4**	**(1.6) a**	**48.5**	**(5.4) b**
SES										
Low	40.2	(6.0)	65.3	(4.3)	76.1	(5.6)	60.4	(4.6)	**43.4**	**(3.2) b**
Middle	40.3	(2.8)	61.7	(3.4)	79.5	(2.5)	60.9	(2.2)	**51.2**	**(2.5) b**
High (ref)	37.9	(3.5)	61.8	(4.0)	78.8	(2.7)	58.8	(2.3)	57.3	(2.4)
Cultural background										
English-speaking (ref)	39.8	(2.3)	62.7	(2.6)	80.2	(1.8)	60.9	(1.6)	**52.6**	**(1.9) b**
European	45.0	(8.3)	46.3	(13.8)	74.1	(12.7)	54.8	(6.0)	45.9	(9.3)
Middle Eastern	32.2	(12.7)	60.3	(8.4)	**58.1**	**(13.5) a**	49.5	(10.7)	42.8	(2.7)
Asian	37.8	(9.3)	66.4	(5.2)	74.3	(5.8)	57.8	(3.7)	**36.0**	**(5.3) b**
BMI category										
Thin	**25.6**	**(6.3) b**	65.3	(5.0)	84.4	(4.2)	60.2	(3.2)	51.5	(3.8)
Healthy weight (ref)	42.1	(2.5)	66.1	(3.2)	79.8	(2.0)	62.2	(1.8)	**52.7**	**(2.1) b**
Overweight	41.9	(4.7)	60.9	(3.5)	75.6	(3.2)	60.9	(2.6)	**52.5**	**(3.2) b**
Obese	32.6	(6.0)	58.0	(4.1)	**67.0**	**(7.5) a**	**52.0**	**(4.4) a**	46.7	(4.4)
GIRLS										
Locality										
Urban (ref)	30.4	(2.9)	56.0	(3.8)	73.3	(3.2)	52.4	(2.3)	**42.1**	**(2.2) b**
Rural	37.7	(4.1)	54.0	(2.9)	75.4	(3.4)	56.2	(2.7)	**33.8**	**(5.7) b**
SES										
Low	29.2	(7.6)	58.3	(4.6)	69.7	(7.6)	52.8	(5.4)	**34.2**	**(3.3) b**
Middle	32.8	(3.5)	51.3	(5.4)	73.0	(4.3)	52.4	(3.1)	**41.9**	**(2.5) b**
High (ref)	32.1	(3.1)	57.5	(4.3)	76.6	(3.3)	54.1	(2.4)	48.7	(2.4)
Cultural background										
English-speaking (ref)	31.8	(2.5)	55.8	(3.3)	75.2	(2.3)	54.0	(1.9)	**43.1**	**(2.1) b**
European	**65.6**	**(14.0) a**	30.1	(18.5)	85.5	(10.7)	66.3	(7.9)	**34.7**	**(10.0) b**
Middle Eastern	23.1	(14.4)	51.0	(6.1)	**33.4**	**(11.5) a**	**36.1**	**(8.3) a**	28.4	(5.0)
Asian	31.1	(9.0)	59.5	(7.1)	73.6	(10.0)	52.3	(4.9)	**33.6**	**(5.8) b**
BMI category										
Thin	**9.8**	**(4.2) a**	60.6	(7.2)	**86.3**	**(4.7) a**	56.3	(4.3)	46.6	(4.3)
Healthy weight (ref)	34.2	(2.7)	58.2	(3.8)	73.0	(2.7)	54.5	(2.1)	**42.6**	**(2.1) b**
Overweight	38.2	(6.3)	56.2	(4.7)	74.3	(4.2)	56.2	(2.9)	**44.3**	**(3.5) b**
Obese	25.7	(7.2)	49.5	(5.9)	63.0	(11.3)	45.4	(5.6)	35.2	(5.9)

CATCH	2015				2010
	Year 2	Year 4	Year 6	All years	All years
BOYS					
Locality					
Urban (ref)	44.7 (3.5)	70.3 (3.6)	81.2 (2.3)	65.4 (2.3)	**58.8 (2.5) b**
Rural	**56.1 (4.4) a**	69.0 (2.4)	**89.0 (2.7) a**	**71.8 (1.2) a**	**59.7 (4.9) b**
SES					
Low	49.6 (6.0)	72.2 (4.9)	82.2 (4.6)	67.6 (4.3)	**52.9 (3.8) b**
Middle	48.4 (4.0)	72.9 (3.2)	85.5 (2.1)	**69.7 (1.7) a**	**59.2 (3.0) b**
High (ref)	45.1 (4.7)	66.4 (5.0)	81.3 (2.9)	64.1 (2.8)	64.4 (2.9)
Cultural background					
English-speaking (ref)	48.6 (3.0)	69.5 (2.9)	85.3 (1.9)	68.2 (1.6)	**61.0 (2.2) b**
European	29.8 (11.9)	60.7 (19.3)	55.6 (22.1)	**43.4 (8.2) a**	59.8 (12.1)
Middle Eastern	42.6 (15.4)	72.4 (13.2)	80.6 (12.0)	64.5 (12.5)	54.9 (4.8)
Asian	46.3 (12.2)	77.6 (7.9)	75.0 (7.1)	65.0 (4.6)	**38.2 (6.1) b**
BMI category					
Thin	45.3 (11.1)	70.1 (6.9)	80.7 (8.6)	65.4 (4.5)	56.9 (5.5)
Healthy weight (ref)	50.5 (3.2)	74.1 (3.7)	86.6 (1.8)	70.1 (1.8)	**61.7 (2.5) b**
Overweight	46.7 (6.1)	66.1 (5.5)	**76.5 (4.5) a**	65.7 (3.9)	59.9 (3.9)
Obese	39.5 (8.2)	67.0 (5.7)	**71.2 (7.9) a**	**58.7 (5.2) a**	56.9 (5.4)

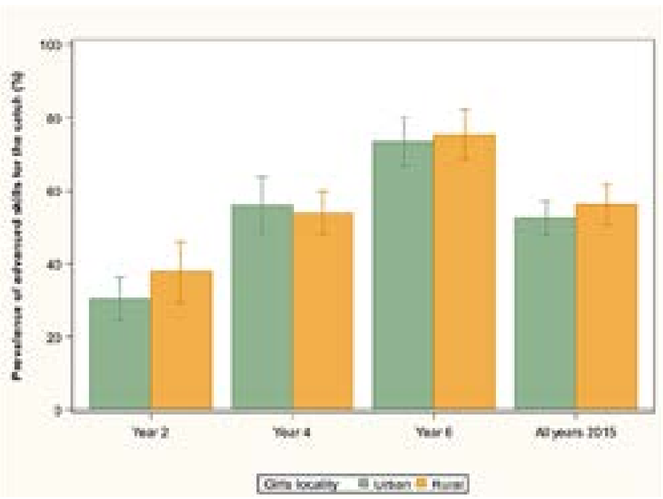
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight, and obese compared with healthy weight BMI category.*

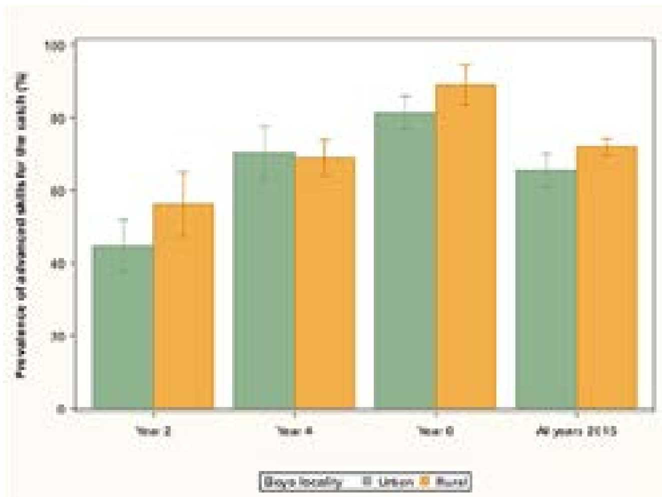
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

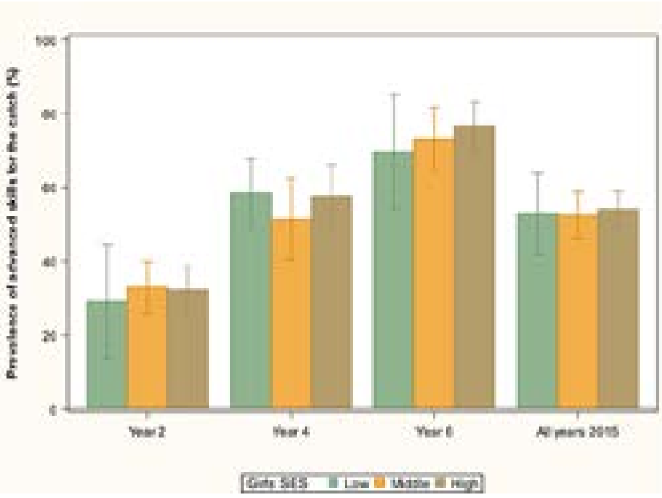
na *Indicates statistical significance could not be calculated due to low numbers.*

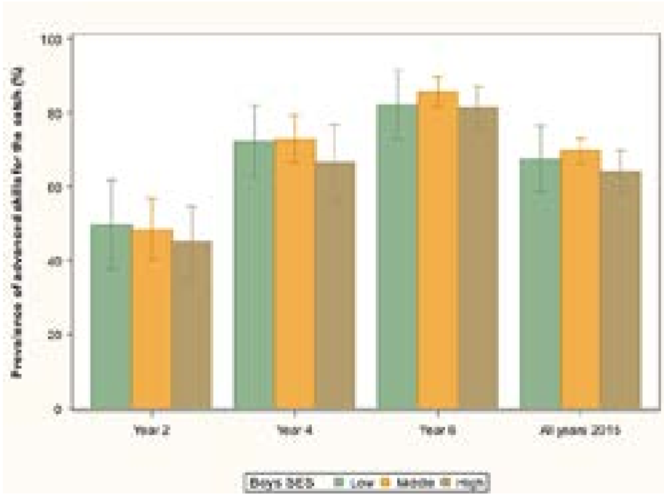
No letter means there was no statistical difference.

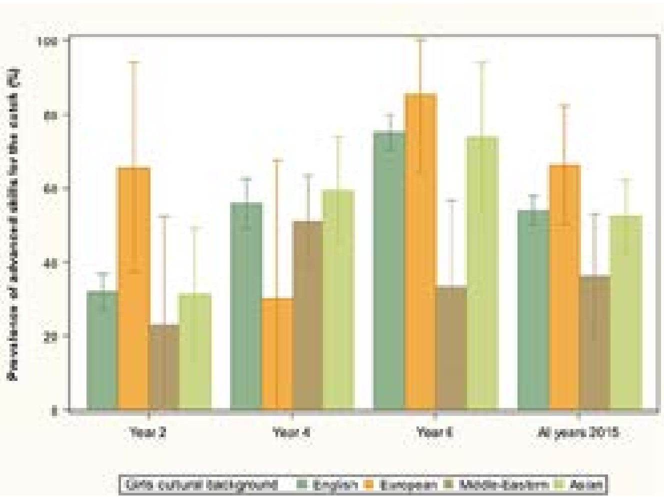
Figure 9.2 Prevalence of advanced skills for the catch among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

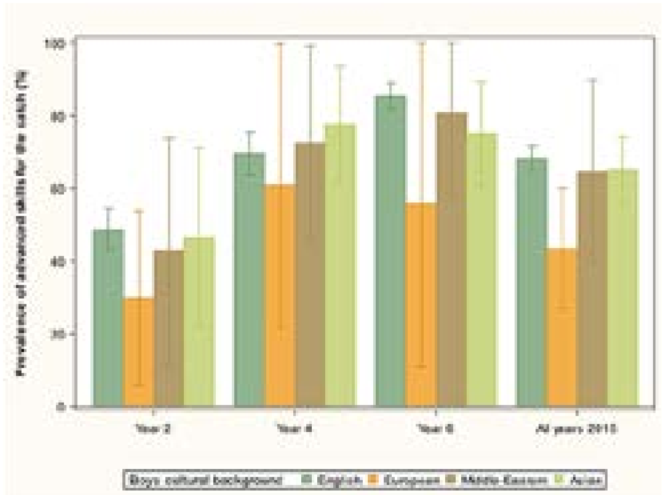


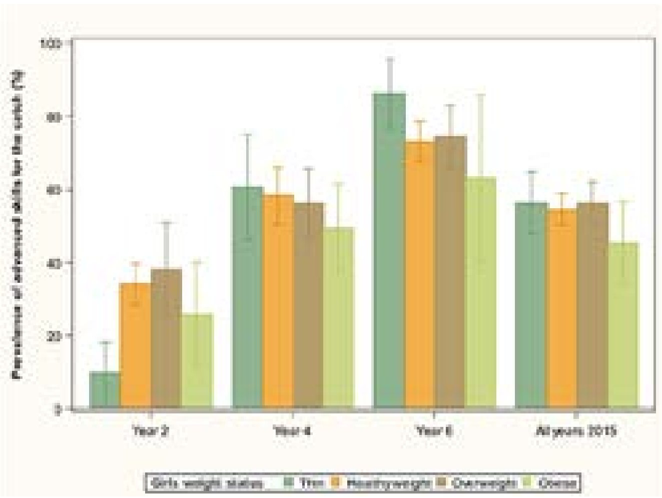


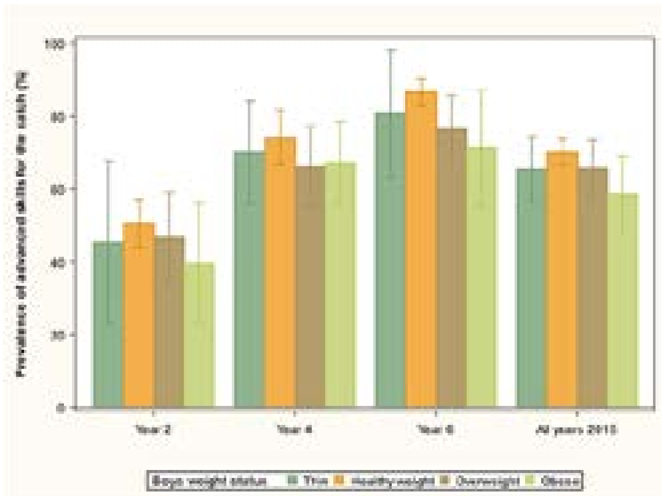

Prevalence of advanced skills for the catch (%)
Year 2
Year 4
Year 6
All years 2015
Girls SES Low Middle High


Prevalence of advanced skills for the catch (%)
Year 2
Year 4
Year 6
All years 2015
Boys SES Low Middle High


Prevalence of advanced skills for the catch (%)
Year 2
Year 4
Year 6
All years 2015
Girls cultural background English European Middle-Eastern Asian


Prevalence of advanced skills for the catch (%)
Year 2
Year 4
Year 6
All years 2015
Boys cultural background English European Middle-Eastern Asian


Prevalence of advanced skills for the catch (%)
Year 2
Year 4
Year 6
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Prevalence of advanced skills for the catch (%)
Year 2
Year 4
Year 6
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

KICK

The current findings indicate that one in two boys (54%) and one in six girls (16%) demonstrated advanced skills in the kick. Table 9.4 and Figure 9.3 show the prevalence of advanced skills in the kick among children by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of advanced skills in the kick between children from urban and rural areas.

Change between 2010-2015: Overall, the prevalence of advanced skills in the kick significantly increased among children from urban areas from 26% in 2010 to 33% in 2015. The prevalence significantly increased among girls from urban areas (from 9% in 2010 to 15% in 2015), and from rural areas from 9% in 2010 to 20% in 2015; and among boys from urban areas, from 41% in 2010 to 53% in 2015.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of advanced skills in the kick between children from different SES backgrounds.

Change between 2010-2015: Overall, the prevalence of advanced skills in the kick significantly increased among children from low SES backgrounds, from 19% in 2010 to 35% in 2015. The prevalence significantly increased among girls from low SES backgrounds (from 5% in 2010 to 17% in 2015), and from high SES backgrounds (from 9% in 2010 to 17% in 2015). The prevalence significantly increased among boys from low SES backgrounds (from 33% in 2010 to 51% in 2015), and from middle SES backgrounds (from 44% in 2010 to 56% in 2015).

Cultural background

2015: Overall, the prevalence of advanced skills in the kick was significantly lower among children from Asian cultural backgrounds (21%), compared with children from English-speaking backgrounds (36%). The prevalence was significantly lower among boys from Asian cultural backgrounds (32%), compared with boys from English-speaking backgrounds (55%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the kick significantly increased among children from English-speaking backgrounds, from 28% in 2010 to 36% in 2015. The prevalence significantly increased among girls from English-speaking backgrounds (from 9% in 2010 to 17% in 2015), and from European cultural backgrounds (from 3% in 2010 to 21% in 2015); and among boys from English-speaking backgrounds, from 44% in 2010 to 55% in 2015.

Weight status

2015: Overall, the prevalence of advanced skills in the kick was significantly lower among children in the thin (29%) and obese (30%) BMI category, compared with children in the healthy weight BMI category (37%). The prevalence was significantly lower among boys in the obese BMI category (46%), compared with boys in the healthy weight BMI category (57%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the kick significantly increased among children in the healthy weight BMI category (from 29% in 2010 to 37% in 2015), in the overweight BMI category (from 25% in 2010 to 34% in 2015) and in the obese BMI category (from 20% in 2010 to 30% in 2015). The prevalence significantly increased among boys in the healthy weight BMI category, from 45% in 2010 to 57% in 2015; and in the overweight BMI category, from 41% in 2010 to 53% in 2015.

Table 9.4 Prevalence of advanced skills for the kick among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015, and 2010 for comparison (%, SE)

KICK	2015								2010	
	Year 2		Year 4		Year 6		All years		All years	
ALL										
Locality										
Urban (ref)	17.6	(2.2)	35.0	(2.4)	48.2	(3.2)	33.4	(2.1)	**25.8**	**(1.9) b**
Rural	24.4	(3.5)	39.1	(3.8)	51.4	(3.7)	38.9	(2.7)	**29.5**	**(3.9) b**
SES										
Low	20.7	(4.1)	33.9	(5.1)	49.6	(3.0)	34.6	(3.0)	**18.8**	**(2.4) b**
Middle	17.4	(2.9)	37.7	(3.0)	48.3	(4.4)	35.0	(2.7)	28.7	(2.1)
High (ref)	19.3	(2.9)	35.7	(2.6)	49.2	(3.6)	34.3	(2.6)	30.4	(3.2)
Cultural background										
English-speaking (ref)	19.8	(2.0)	37.7	(2.1)	49.1	(2.7)	35.7	(1.8)	**27.5**	**(1.7) b**
European	6.5	(4.4)	24.6	(13.5)	60.8	(13.7)	28.3	(7.3)	28.4	(8.7)
Middle Eastern	26.5	(8.3)	30.3	(10.1)	44.6	(11.6)	33.2	(8.3)	23.9	(6.9)
Asian	**7.2**	**(3.0) a**	**18.4**	**(5.1) a**	41.2	(7.7)	**20.5**	**(3.6) a**	14.8	(2.6)
BMI category										
Thin	17.1	(5.2)	30.3	(4.7)	**36.6**	**(6.7) a**	**28.6**	**(3.5) a**	23.6	(3.1)
Healthy weight (ref)	20.6	(2.4)	38.9	(2.1)	51.5	(3.2)	36.8	(2.0)	**29.0**	**(1.9) b**
Overweight	18.2	(4.2)	34.8	(4.1)	46.1	(3.4)	34.4	(2.7)	**24.6**	**(2.6) b**
Obese	15.4	(3.9)	32.5	(5.8)	44.0	(6.2)	**30.2**	**(3.4) a**	**19.5**	**(2.9) b**
GIRLS										
Locality										
Urban (ref)	4.6	(1.5)	16.7	(2.8)	26.1	(3.3)	15.4	(2.0)	**15.4**	**(2.0) b**
Rural	**9.4**	**(1.9) a**	16.6	(3.7)	31.8	(5.9)	19.8	(3.3)	**19.8**	**(3.3)b**
SES										
Low	6.6	(3.3)	17.5	(6.1)	26.3	(6.2)	16.9	(3.9)	**4.9**	**(1.1) b**
Middle	4.2	(1.5)	17.1	(3.4)	23.1	(6.0)	14.9	(3.0)	11.8	(1.7)
High (ref)	6.0	(2.2)	15.9	(2.6)	31.6	(3.1)	17.2	(2.2)	**9.4**	**(1.9) b**
Cultural background										
English-speaking (ref)	5.8	(1.4)	17.0	(2.3)	27.7	(3.0)	16.8	(1.7)	**9.3**	**(1.2) b**
European	na		na		50.6	(18.7)	20.6	(10.0)	**2.5**	**(2.6) b**
Middle Eastern	11.0	(9.8)	13.7	(12.5)	13.2	(8.2)	12.6	(8.1)	9.1	(5.0)
Asian	na		16.0	(6.3)	22.4	(10.2)	11.7	(3.7)	7.7	(1.7)
BMI category										
Thin	5.0	(3.8)	8.0	(3.7)	23.2	(6.3)	13.2	(3.3)	8.7	(2.3)
Healthy weight (ref)	5.5	(1.6)	17.7	(2.6)	29.5	(3.6)	17.3	(1.9)	**10.6**	**(1.3) b**
Overweight	7.5	(3.3)	19.4	(4.4)	21.9	(4.5)	16.4	(2.8)	**6.4**	**(1.7) b**
Obese	3.9	(2.7)	16.1	(5.3)	25.5	(10.9)	14.7	(4.4)	**4.5**	**(2.1) b**

KICK	2015				2010
	Year 2	Year 4	Year 6	All years	All years
BOYS					
Locality					
Urban (ref)	32.5 (3.4)	54.6 (3.0)	70.7 (3.3)	52.8 (2.3)	**41.4 (2.7) b**
Rural	37.4 (5.4)	59.8 (4.6)	69.0 (4.9)	56.0 (2.9)	45.2 (5.7)
SES					
Low	32.6 (6.1)	49.6 (5.7)	71.8 (4.3)	50.8 (2.6)	**33.3 (4.5) b**
Middle	31.9 (4.8)	60.0 (3.9)	71.6 (4.4)	55.7 (3.0)	**43.5 (2.8) b**
High (ref)	35.7 (3.5)	56.2 (3.8)	68.0 (4.5)	53.3 (3.1)	47.7 (4.3)
Cultural background					
English-speaking (ref)	35.4 (2.9)	58.0 (2.7)	70.4 (2.7)	55.1 (1.9)	**43.8 (2.5) b**
European	**11.3 (7.1) a**	46.6 (20.6)	77.3 (14.4)	**36.0 (8.8) a**	60.9 (12.0)
Middle Eastern	44.2 (9.7)	50.7 (7.5)	73.1 (11.9)	55.8 (7.7)	36.4 (9.6)
Asian	**16.3 (6.7) a**	**22.0 (7.0) a**	59.5 (8.7)	**31.8 (5.5) a**	21.4 (4.2)
BMI category					
Thin	32.5 (10.3)	52.8 (5.8)	62.4 (10.2)	49.3 (4.8)	40.2 (5.2)
Healthy weight (ref)	36.5 (3.4)	60.2 (3.1)	73.3 (3.2)	56.6 (2.4)	**45.1 (2.7) b**
Overweight	32.0 (6.7)	51.5 (5.6)	64.9 (4.4)	52.5 (3.7)	**41.1 (3.8) b**
Obese	27.2 (7.2)	48.8 (8.1)	62.8 (9.4)	**45.7 (3.7) a**	32.9 (5.5)

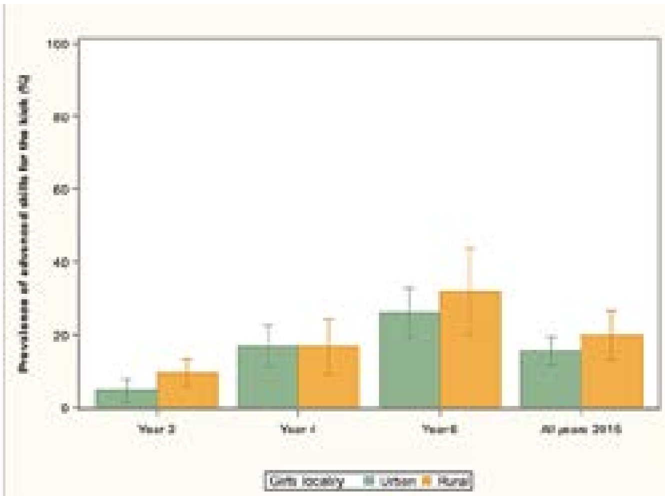
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

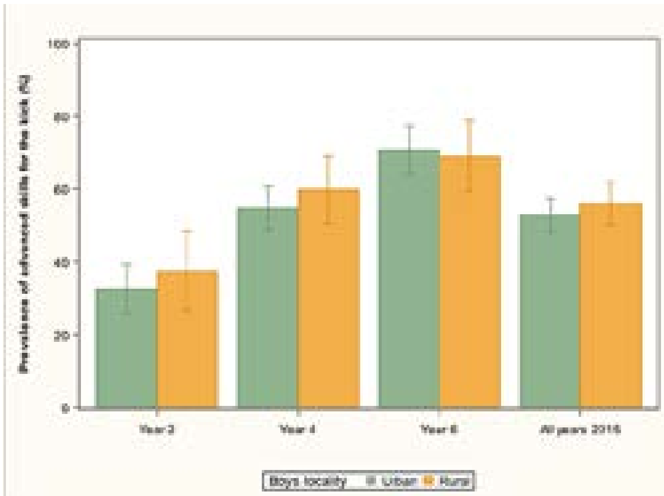
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

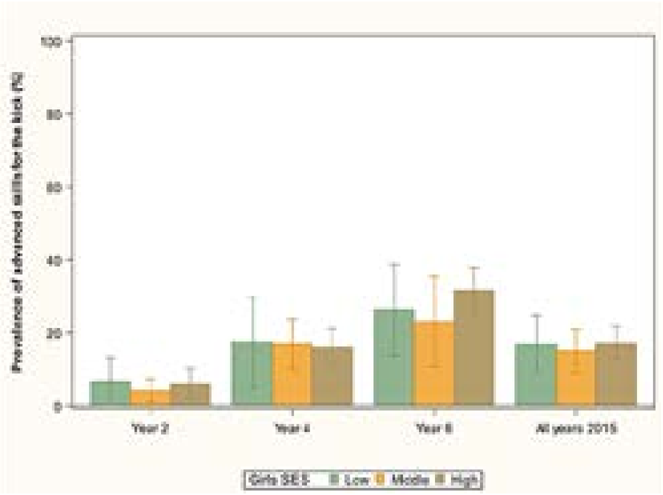
na *Indicates statistical significance could not be calculated due to low numbers.*

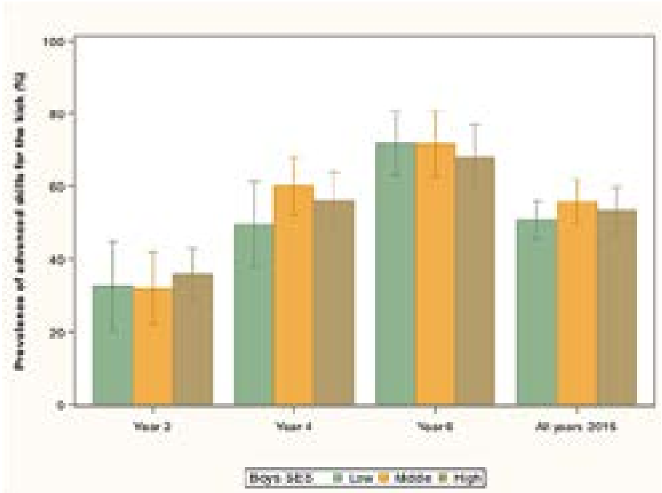
No letter means there was no statistical difference.

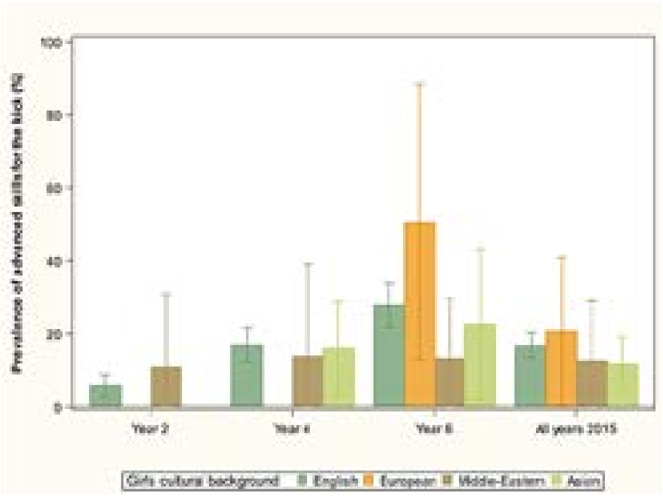
Figure 9.3 Prevalence of advanced skills for the kick among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

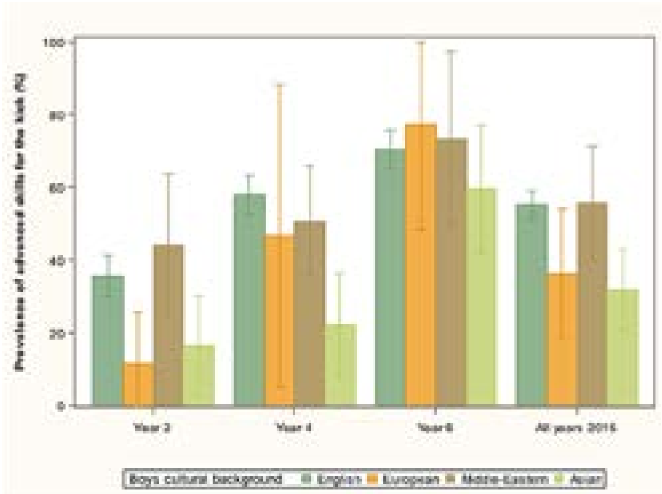


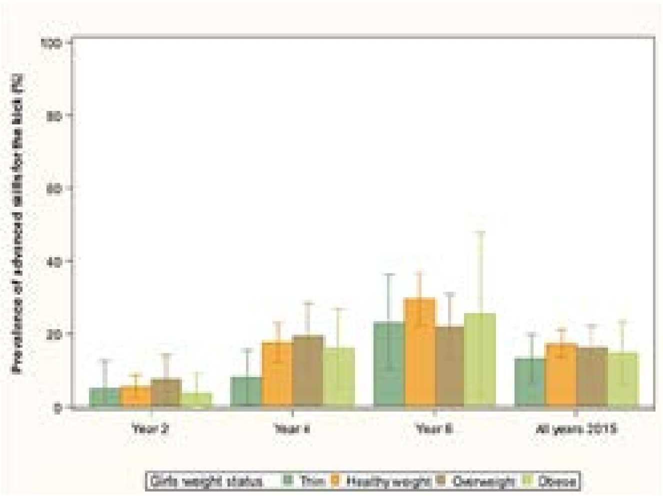


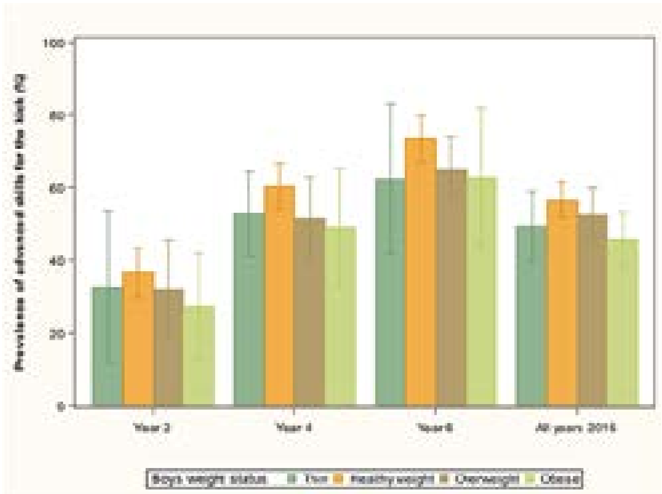

Prevalence of advanced skills for the kick (%)
0
20
40
60
80
100
Year 2
Year 4
Year 6
All years 2015
Girls SES
Low
Middle
High


Prevalence of advanced skills for the kick (%)
0
20
40
60
80
100
Year 2
Year 4
Year 6
All years 2015
Boys SES
Low
Middle
High


Prevalence of advanced skills for the kick (%)
0
20
40
60
80
100
Year 2
Year 4
Year 6
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skills for the kick (%)
0
20
40
60
80
100
Year 2
Year 4
Year 6
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skills for the kick (%)
0
20
40
60
80
100
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of advanced skills for the kick (%)
0
20
40
60
80
100
Year 2
Year 4
Year 6
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

OVER-ARM THROW

The current findings indicate that approximately one in two boys (52%) and one in six girls (18%) demonstrated advanced skills in the over-arm throw. The difference was significant between boys and girls. Table 9.5 and Figure 9.4 show the prevalence of advanced skills in the overarm throw among children by sex, year group, socio-demographic characteristics, and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of advanced skills in the over-arm throw between children from urban and rural areas.

Change between 2010-2015: Overall, the prevalence of advanced skills in the over-arm throw significantly increased among children from urban areas, from 27% in 2010 to 33% in 2015. The prevalence significantly increased among girls from urban areas (from 11% in 2010 to 17% in 2015), and from rural areas (from 12% in 2010 to 20% in 2015); and among boys from urban areas, from 42% in 2010 to 51% in 2015.

Socio-economic status

2015: Overall, the prevalence of advanced skills in the over-arm throw was significantly lower among boys from low SES backgrounds (43%), compared with boys from high SES backgrounds (56%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the over-arm throw significantly increased among children from low SES backgrounds, from 21% in 2010 to 31% in 2015. The prevalence significantly increased among girls from low SES backgrounds, from 8% in 2010 to 18% in 2015; and from middle SES backgrounds, from 11% in 2010 to 17% in 2015.

Cultural background

2015: Overall, the prevalence of advanced skills in the over-arm throw was significantly lower among children from Asian cultural backgrounds (24%), compared with children from English-speaking backgrounds (36%). The prevalence was significantly lower among boys from Asian cultural backgrounds (37%), compared with boys from English-speaking backgrounds (54%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the over-arm throw significantly increased among children from English-speaking backgrounds from 29% in 2010 to 36% in 2015. The prevalence significantly increased among girls from English-speaking backgrounds, from 11% in 2010 to 19% in 2015; and among boys from English-speaking backgrounds, from 44% in 2010 to 54% in 2015.

Weight status

2015: Overall, the prevalence of advanced skills in the over-arm throw was significantly lower among children in the obese BMI category (29%), compared with children in the healthy weight BMI category (36%). The prevalence was significantly lower among boys the obese BMI category (41%), compared with boys in the healthy weight BMI category (53%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the over-arm throw significantly increased among children in the overweight BMI category, from 26% in 2010 to 35% in 2015. The prevalence significantly increased among girls in the healthy weight BMI category, from 13% in 2010 to 19% in 2015; in the overweight BMI category, from 10% in 2010 to 16% in 2015 and; in the obese BMI category from 8% in 2010 to 17% in 2015. The prevalence significantly increased among boys in the overweight BMI category, from 41% in 2010 to 55% in 2015.

Table 9.5 Prevalence of advanced skills for the over-arm throw among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015, and 2010 for comparison (%, SE)

OVER-ARM THROW	2015								2010	
	Year 2		Year 4		Year 6		All years		All years	
ALL										
Locality										
Urban (ref)	17.6	(2.2)	35.9	(2.5)	47.4	(3.1)	33.4	(2.2)	**27.0**	**(1.8) b**
Rural	22.5	(2.9)	36.2	(3.4)	53.9	(3.5)	38.2	(2.3)	36.0	(4.3)
SES										
Low	17.7	(4.5)	29.8	(4.0)	46.3	(5.2)	31.1	(3.6)	**21.1**	**(1.9) b**
Middle	16.3	(2.8)	36.1	(3.1)	49.5	(3.7)	34.4	(2.5)	29.5	(2.4)
High (ref)	20.7	(2.8)	39.1	(3.2)	49.8	(3.4)	36.2	(2.5)	33.6	(2.9)
Cultural background										
English-speaking (ref)	19.2	(1.9)	37.8	(2.1)	50.4	(2.7)	35.9	(1.8)	**28.5**	**(1.9) b**
European	22.2	(9.6)	**5.8**	**(5.5) a**	37.9	(14.0)	23.8	(6.9)	37.1	(9.2)
Middle Eastern	11.1	(5.0)	22.0	(9.9)	37.5	(13.3)	22.7	(8.3)	22.4	(3.1)
Asian	**12.3**	**(2.8) a**	**28.1**	**(4.7) a**	34.3	(7.9)	**23.9**	**(3.6) a**	23.5	(3.4)
BMI category										
Thin	21.0	(6.2)	38.7	(5.2)	**38.3**	**(5.4) a**	33.3	(3.2)	26.1	(3.2)
Healthy weight (ref)	20.5	(2.3)	37.6	(2.5)	50.3	(2.9)	35.9	(1.9)	30.9	(2.1)
Overweight	14.5	(3.1)	34.8	(3.4)	51.4	(3.5)	35.3	(2.6)	**26.0**	**(2.3) b**
Obese	14.5	(3.7)	34.7	(5.1)	38.2	(6.5)	**29.0**	**(3.4) a**	23.0	(2.6)
GIRLS										
Locality										
Urban (ref)	8.4	(1.8)	19.5	(2.3)	25.3	(2.6)	17.4	(1.7)	**11.1**	**(1.2) b**
Rural	6.4	(2.2)	17.0	(2.1)	33.2	(5.5)	19.5	(2.4)	**11.8**	**(2.9) b**
SES										
Low	10.8	(3.0)	17.0	(3.2)	26.9	(5.3)	18.2	(3.0)	**8.3**	**(1.8) b**
Middle	6.5	(2.6)	17.9	(2.5)	25.4	(3.8)	16.7	(2.0)	**11.3**	**(1.3) b**
High (ref)	8.0	(2.1)	20.8	(3.0)	28.6	(3.7)	18.6	(2.2)	14.6	(1.8)
Cultural background										
English-speaking (ref)	7.9	(1.5)	19.6	(1.9)	29.2	(2.7)	18.9	(1.5)	**11.2**	**(1.2) b**
European	16.3	(9.1)	na		6.4	(6.5)	8.8	(4.5)	17.9	(9.3)
Middle Eastern	9.3	(6.8)	11.3	(7.9)	**7.0**	**(5.4) a**	9.4	(6.4)	7.3	(2.7)
Asian	8.0	(3.2)	21.1	(6.3)	**9.5**	**(6.1) a**	13.5	(3.5)	9.7	(2.1)
BMI category										
Thin	7.3	(4.7)	15.2	(5.5)	25.3	(6.0)	17.0	(3.2)	9.2	(2.9)
Healthy weight (ref)	8.8	(1.8)	20.7	(2.3)	28.6	(3.1)	19.1	(1.6)	**12.8**	**(1.3) b**
Overweight	5.6	(2.6)	18.0	(2.8)	22.8	(4.1)	15.5	(2.3)	**9.7**	**(1.9) b**
Obese	10.8	(4.7)	16.4	(5.3)	24.7	(6.2)	17.1	(2.8)	**7.7**	**(2.8) b**

OVER-ARM THROW	2015				2010
	Year 2	Year 4	Year 6	All years	All years
BOYS					
Locality					
Urban (ref)	27.9 (3.5)	53.5 (3.4)	70.0 (3.7)	50.5 (2.7)	**41.8 (2.6) b**
Rural	36.9 (4.6)	54.0 (5.1)	72.8 (4.3)	55.2 (3.5)	54.5 (3.7)
SES					
Low	23.7 (6.7)	**42.2 (6.2) b**	65.0 (6.1)	**43.1 (4.6) a**	34.5 (2.9)
Middle	26.6 (4.1)	55.8 (4.2)	71.8 (5.0)	52.4 (3.5)	45.3 (3.4)
High (ref)	36.6 (4.3)	58.4 (4.4)	72.6 (3.6)	55.9 (2.3)	49.3 (3.7)
Cultural background					
English-speaking (ref)	31.6 (2.9)	56.0 (2.8)	71.7 (3.2)	53.6 (2.1)	**44.1 (2.5) b**
European	26.6 (13.7)	**11.0 (10.8) a**	88.8 (10.1)	38.6 (11.2)	61.1 (11.7)
Middle Eastern	**13.2 (6.1) a**	35.0 (12.9)	65.1 (16.4)	37.2 (9.6)	35.1 (5.6)
Asian	**17.9 (5.7) a**	39.0 (8.5)	58.7 (11.8)	**37.4 (5.7) a**	36.3 (5.6)
BMI category					
Thin	38.4 (9.0)	63.0 (7.1)	63.6 (8.6)	55.6 (4.4)	45.1 (5.7)
Healthy weight (ref)	32.8 (3.6)	54.8 (3.5)	71.9 (3.8)	53.1 (2.4)	46.8 (2.8)
Overweight	26.1 (4.6)	53.5 (5.5)	73.6 (3.7)	55.3 (3.2)	**40.8 (3.6) b**
Obese	18.0 (6.9)	53.2 (6.2)	**52.1 (9.8) a**	**41.0 (5.3) a**	36.7 (4.2)

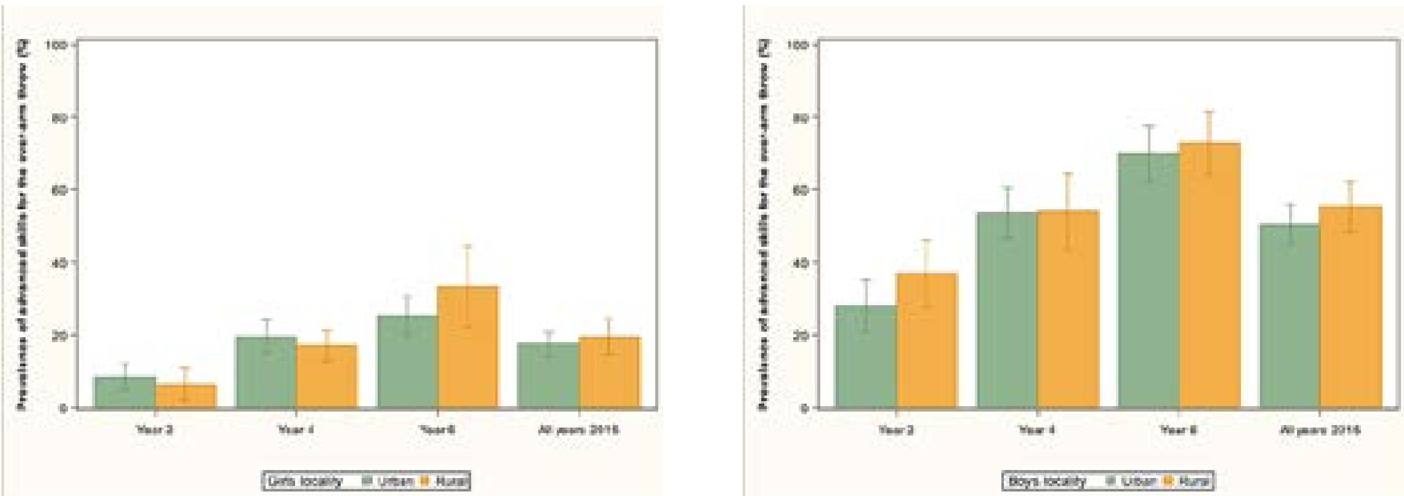
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

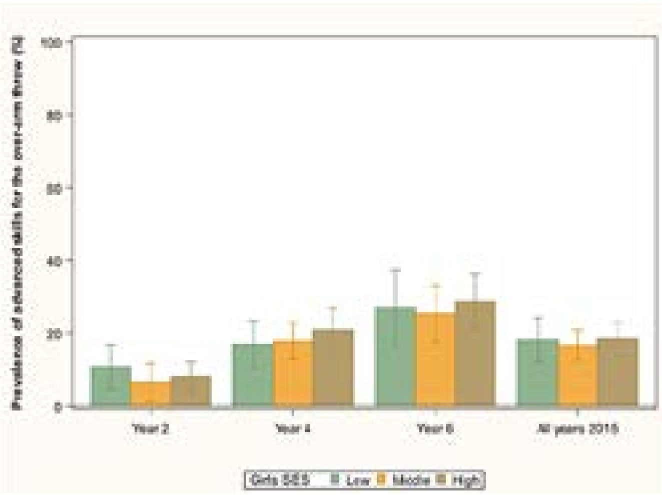
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

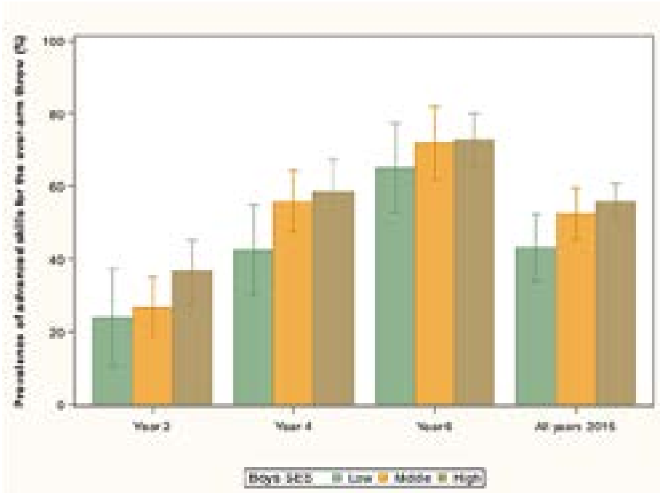
na *Indicates statistical significance could not be calculated due to low numbers.*

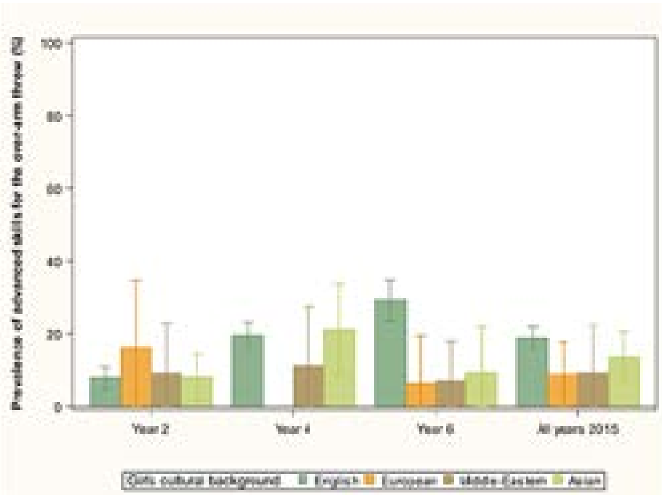
No letter means there was no statistical difference.

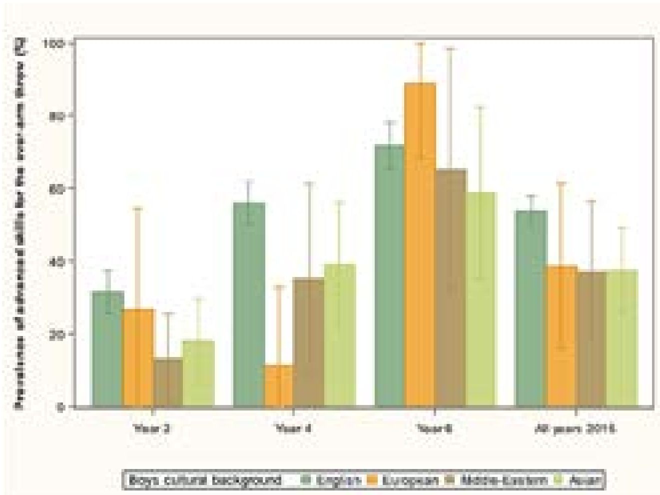
Figure 9.4 Prevalence of advanced skills for the over-arm throw among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

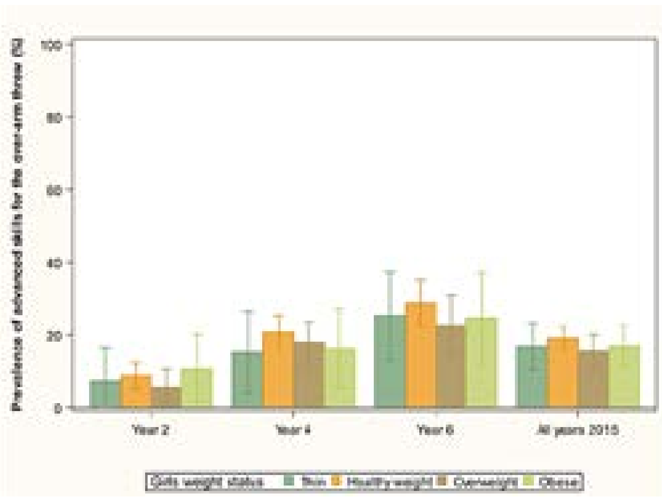


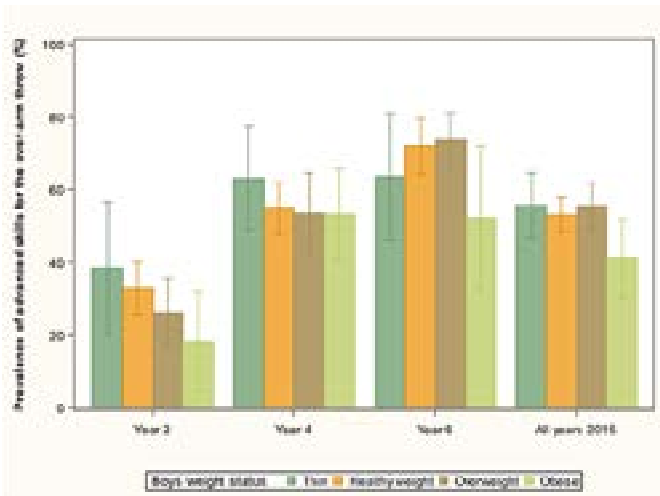

Prevalence of advanced skills for the over-arm throw (%)
100
80
60
40
20
0
Year 2
Year 4
Year 6
All years 2015
Girls SES
Low
Middle
High


Prevalence of advanced skills for the over-arm throw (%)
100
80
60
40
20
0
Year 2
Year 4
Year 6
All years 2015
Boys SES
Low
Middle
High


Prevalence of advanced skills for the over-arm throw (%)
100
80
60
40
20
0
Year 2
Year 4
Year 6
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skills for the over-arm throw (%)
100
80
60
40
20
0
Year 2
Year 4
Year 6
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skills for the over-arm throw (%)
100
80
60
40
20
0
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of advanced skills for the over-arm throw (%)
100
80
60
40
20
0
Year 2
Year 4
Year 6
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

SIDE GALLOP

The current findings indicate approximately three in four boys (75%) and four in five girls (80%) demonstrated advanced skills in the side gallop. The difference was significant between boys and girls. Table 9.6 and Figure 9.5 show the prevalence of advanced skills in the side gallop among children by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of advanced skills in the side gallop between children from urban and rural areas.

Change between 2010-2015: Overall, the prevalence of advanced skills in the side gallop significantly increased among children from urban areas, from 64% in 2010 to 77% in 2015; and from rural areas, from 64% in 2010 to 80% in 2015. The prevalence significantly increased among girls from urban areas, from 67% in 2010 to 80% in 2015; and from rural areas, from 65% in 2010 to 82% in 2015. The prevalence significantly increased among boys from urban areas, from 61% in 2010 to 75% in 2015; and from rural areas, from 63% in 2010 to 77% in 2015.

Socio-economic status

2015: Overall, the prevalence of advanced skills in the side gallop was significantly lower among children from low SES backgrounds (71%), compared with children from high SES backgrounds (81%). The prevalence was significantly lower among girls from low SES backgrounds (75%), compared with girls from high SES backgrounds (83%); and among boys from low SES backgrounds (68%), compared with girls from high SES backgrounds (79%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the side gallop significantly increased among children from low SES backgrounds, from 58% in 2010 to 71% in 2015; from middle SES backgrounds, from 65% in 2010 to 79% in 2015; and from high SES backgrounds, from 69% in 2010 to 81% in 2015. The prevalence significantly increased among girls from low SES backgrounds, from 61% in 2010 to 75% in 2015; from middle SES backgrounds, from 69% in 2010 to 81% in 2015; and from high SES backgrounds, from 72% in 2010 to 83% in 2015. The prevalence significantly increased among boys from low SES backgrounds, from 55% in 2010 to 68% in 2015; from middle SES backgrounds, from 61% in 2010 to 76% in 2015; and from high SES backgrounds, from 67% in 2010 to 79% in 2015.

Cultural background

2015: Overall, the prevalence of advanced skills in the side gallop was significantly lower among children from Middle Eastern cultural backgrounds (59%), compared with children from English-speaking backgrounds (79%). The prevalence was significantly lower among girls from Middle Eastern cultural backgrounds (62%), compared with girls from English-speaking backgrounds (81%); and among boys Middle Eastern cultural backgrounds (56%), compared with boys from English-speaking backgrounds (77%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the side gallop significantly increased among children from English-speaking backgrounds, from 65% in 2010 to 79% in 2015; and among children from Asian cultural backgrounds, from 62% in 2010 to 75% in 2015. The prevalence significantly increased among girls from English-speaking backgrounds (from 68% in 2010 to 81% in 2015), and from Asian cultural backgrounds (from 67% in 2010 to 82% in 2015); and among boys from English-speaking backgrounds, from 62% in 2010 to 77% in 2015.

Weight status

2015: Overall, the prevalence of advanced skills in the side gallop was significantly lower among children in the overweight BMI (75%) and obese (68%) BMI categories, compared with children in the healthy weight BMI category (82%). The prevalence was significantly lower among girls in the overweight BMI (78%) and obese BMI categories (74%), compared with girls in the healthy weight BMI category (84%); and among boys in the overweight BMI (71%) and obese BMI categories (62%), compared with girls in the healthy weight BMI category (79%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the side gallop significantly increased among children in the thin BMI category, from 66% in 2010 to 82% in 2015; in the healthy weight BMI category, from 68% in 2010 to 82% in 2015; in the overweight BMI category from 64% in 2010 to 75% in 2015; and in the obese BMI category, from 50% in 2010 to 68% in 2015.

The prevalence significantly increased among girls in the healthy weight BMI category, from 71% in 2010 to 84% in 2015; in the overweight BMI category, from 67% in 2010 to 78% in 2015; and in the obese BMI category, from 55% in 2010 to 74% in 2015. The prevalence significantly increased among boys in the thin BMI category, from 58% in 2010 to 82% in 2015; in the healthy weight BMI category, from 66% in 2010 to 79% in 2015; in the overweight BMI category, from 62% in 2010 to 71% in 2015; and in the obese BMI category, from 46% in 2010 to 62% in 2015.

Table 9.6 Prevalence of advanced skills for the side gallop among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015, and 2010 for comparison (%, SE)

SIDE GALLOP	2015								2010	
	Year 2		Year 4		Year 6		All years		All years	
ALL										
Locality										
Urban (ref)	64.1	(2.8)	79.9	(2.5)	88.8	(1.9)	77.4	(2.0)	**63.9**	**(1.8) b**
Rural	67.0	(5.0)	82.7	(3.6)	88.3	(2.1)	79.7	(2.8)	**63.8**	**(2.0) b**
SES										
Low	56.4	(6.8)	**74.2**	**(5.2) a**	**83.9**	**(3.2) a**	**71.4**	**(4.4) a**	**57.7**	**(2.9) b**
Middle	66.5	(3.4)	81.4	(3.4)	87.4	(2.3)	78.5	(2.2)	**64.8**	**(1.8) b**
High (ref)	67.5	(2.4)	83.4	(1.9)	92.4	(1.8)	80.8	(1.4)	**69.2**	**(2.6) b**
Cultural background										
English-speaking (ref)	66.3	(2.2)	81.5	(1.9)	89.6	(1.4)	79.2	(1.4)	**64.6**	**(1.8) b**
European	67.4	(9.2)	76.8	(13.6)	100.0	(0.0)	80.2	(5.4)	71.8	(6.1)
Middle Eastern	46.7	(11.9)	**59.6**	**(11.4) a**	**73.9**	**(5.5) a**	**59.2**	**(7.6) a**	52.9	(4.2)
Asian	62.4	(5.8)	79.1	(4.8)	87.7	(4.2)	75.3	(3.5)	**61.7**	**(3.1) b**
BMI category										
Thin	67.3	(6.2)	85.0	(4.0)	91.5	(3.0)	82.0	(3.1)	**66.0**	**(3.9) b**
Healthy weight (ref)	69.5	(2.6)	85.0	(2.0)	91.3	(1.5)	81.7	(1.6)	**68.3**	**(1.7) b**
Overweight	64.6	(4.9)	**74.5**	**(3.7) a**	**82.3**	**(2.6) a**	**74.6**	**(2.5) a**	**64.1**	**(2.7) b**
Obese	**46.2**	**(5.8) a**	80.8	(3.8)	**78.1**	**(4.3) a**	**68.2**	**(2.6) a**	**50.3**	**(3.7) b**
GIRLS										
Locality										
Urban (ref)	67.9	(3.4)	82.2	(2.7)	91.1	(1.9)	80.0	(2.3)	**67.3**	**(2.1) b**
Rural	71.8	(4.9)	84.9	(2.6)	88.8	(3.9)	82.2	(2.2)	**64.6**	**(2.1) b**
SES										
Low	**57.4**	**(7.8) a**	78.6	(5.0)	**87.6**	**(3.2) a**	**74.8**	**(4.9) a**	**60.6**	**(4.0) b**
Middle	71.1	(3.8)	83.1	(3.7)	88.8	(3.1)	80.9	(2.5)	**68.9**	**(2.2) b**
High (ref)	71.4	(3.1)	84.8	(2.3)	93.7	(1.6)	82.7	(1.7)	**71.8**	**(2.8) b**
Cultural background										
English-speaking (ref)	69.3	(2.7)	83.7	(2.1)	91.3	(1.6)	81.3	(1.6)	**68.1**	**(2.1) b**
European	76.0	(12.8)	79.1	(18.3)	100.0	(0.0)	86.2	(6.0)	78.0	(9.2)
Middle Eastern	55.1	(16.2)	**60.9**	**(9.4) a**	**72.2**	**(7.3) a**	**61.8**	**(8.7) a**	49.8	(5.2)
Asian	73.7	(5.8)	84.5	(5.8)	90.3	(5.5)	81.8	(3.7)	**66.5**	**(4.4) b**
BMI category										
Thin	65.8	(8.9)	87.7	(5.2)	89.2	(4.1)	82.1	(3.4)	73.5	(4.4)
Healthy weight (ref)	73.0	(3.2)	86.2	(2.4)	93.4	(1.7)	83.9	(2.0)	**71.4**	**(2.0) b**
Overweight	70.5	(5.6)	80.5	(3.8)	**82.7**	**(4.0) a**	**78.0**	**(3.0) a**	**66.6**	**(3.1) b**
Obese	**54.1**	**(7.8) a**	85.6	(4.6)	**84.5**	**(3.8) a**	**74.4**	**(3.5) a**	**54.8**	**(4.2) b**

SIDE GALLOP	2015								2010	
	Year 2		Year 4		Year 6		All years		All years	
BOYS										
Locality										
Urban (ref)	59.8	(3.3)	77.5	(3.0)	86.5	(2.4)	74.6	(2.1)	**60.7**	**(2.1) b**
Rural	62.8	(5.8)	80.5	(5.4)	87.7	(3.3)	77.4	(3.8)	**63.2**	**(3.8) b**
SES										
Low	55.6	(6.7)	**69.9**	**(6.1) a**	**80.4**	**(4.3) a**	**68.3**	**(4.3) a**	**54.7**	**(3.6) b**
Middle	61.7	(4.8)	79.4	(4.3)	86.2	(3.0)	76.1	(2.7)	**61.2**	**(1.9) b**
High (ref)	62.5	(3.0)	81.9	(2.3)	91.0	(2.5)	78.6	(1.9)	**67.0**	**(3.1) b**
Cultural background										
English-speaking (ref)	62.9	(2.9)	79.2	(2.5)	88.0	(2.0)	76.9	(1.8)	**61.5**	**(2.0) b**
European	61.2	(13.5)	74.5	(20.8)	100.0	(0.0)	74.0	(9.0)	64.0	(11.5)
Middle Eastern	**37.1**	**(9.7) a**	58.0	(14.7)	**75.5**	**(5.9) a**	**56.4**	**(7.2) a**	55.6	(5.8)
Asian	47.7	(11.0)	71.6	(8.0)	85.2	(7.2)	67.3	(5.4)	57.3	(4.0)
BMI category										
Thin	69.1	(9.6)	82.1	(5.2)	95.8	(3.9)	81.9	(4.6)	**57.6**	**(5.9) b**
Healthy weight (ref)	65.8	(3.1)	83.7	(3.0)	89.2	(1.9)	79.4	(1.8)	**65.5**	**(2.1) b**
Overweight	57.1	(6.7)	**67.8**	**(5.4) a**	**82.0**	**(3.6) a**	**71.2**	**(3.2) a**	**61.8**	**(3.4) b**
Obese	**37.8**	**(6.7) a**	76.0	(5.7)	**71.5**	**(7.3) a**	**61.8**	**(4.2) a**	**46.2**	**(5.6) b**

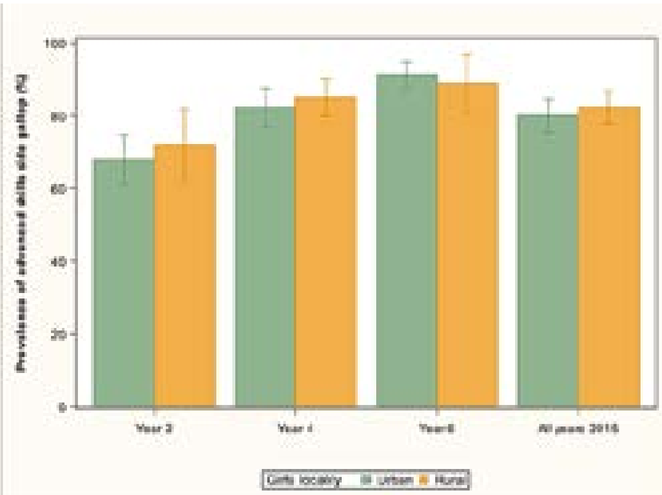
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

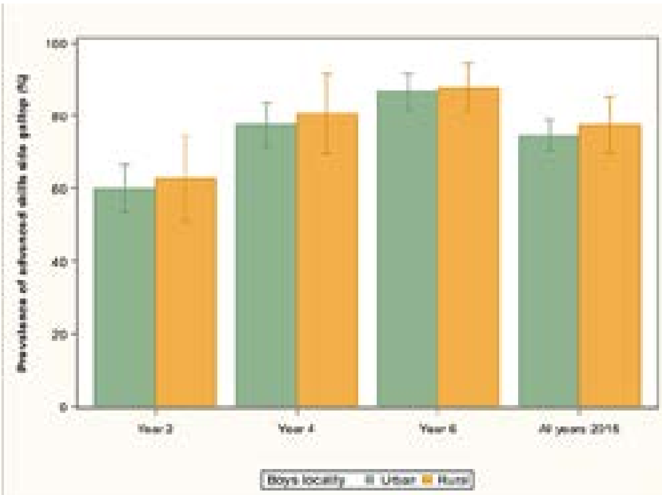
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

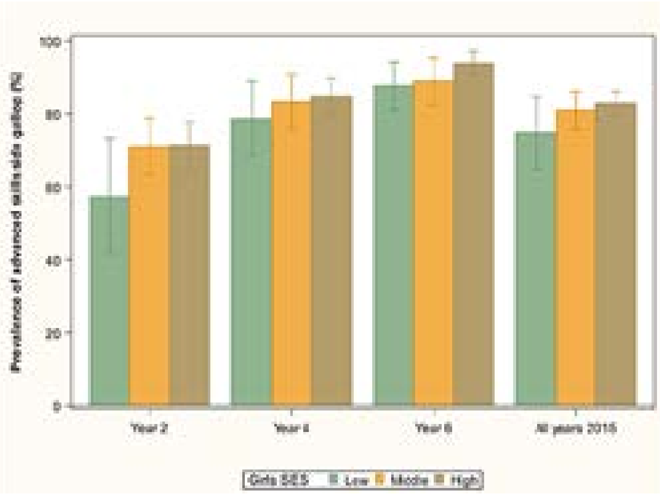
na *Indicates statistical significance could not be calculated due to low numbers.*

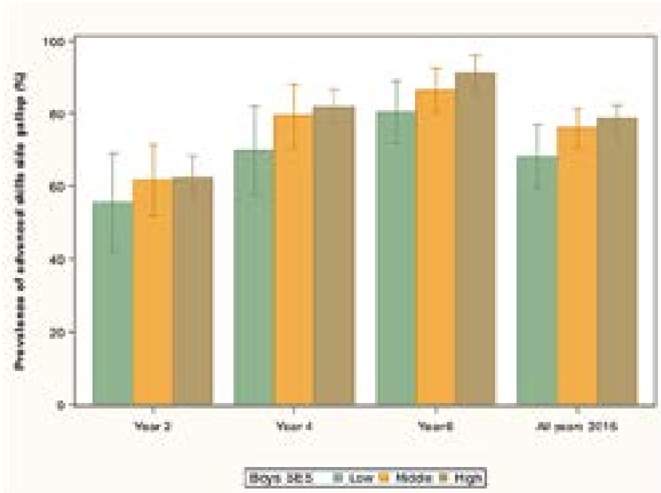
No letter means there was no statistical difference.

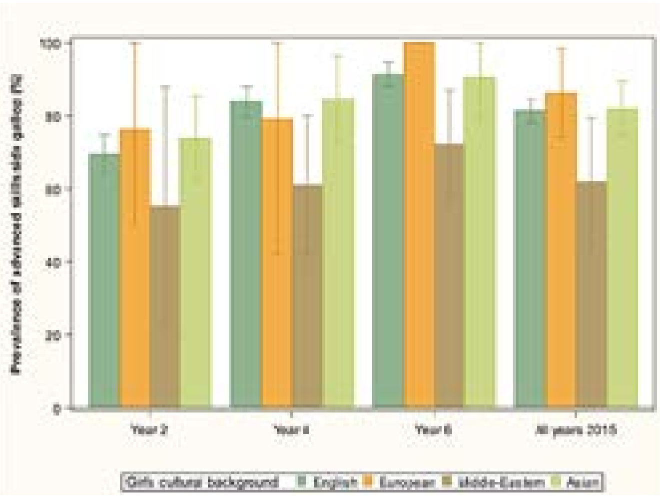
Figure 9.5 Prevalence of advanced skills for the side gallop among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

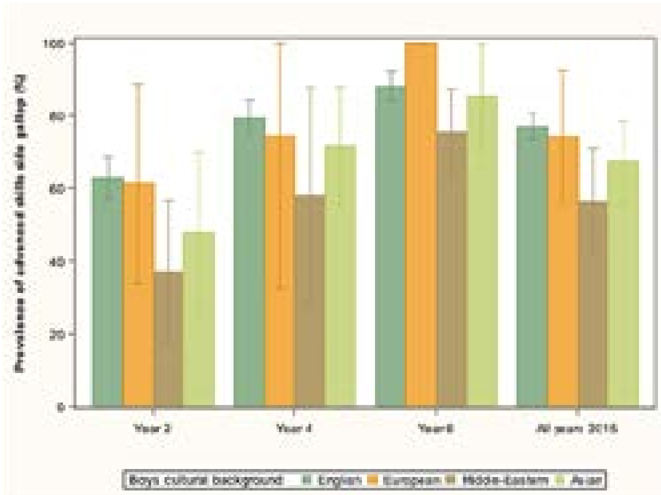


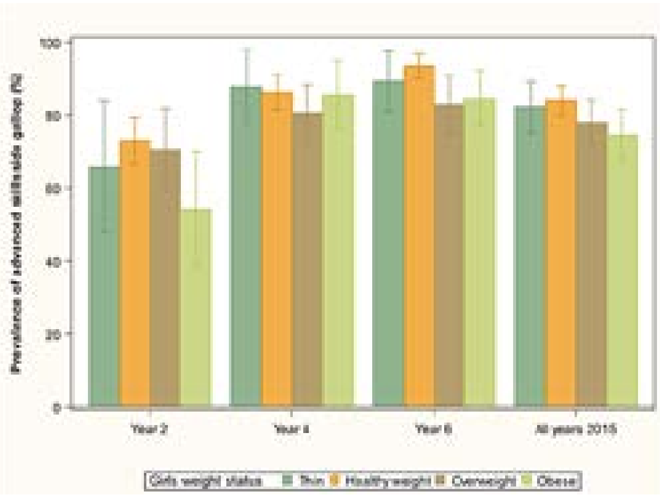


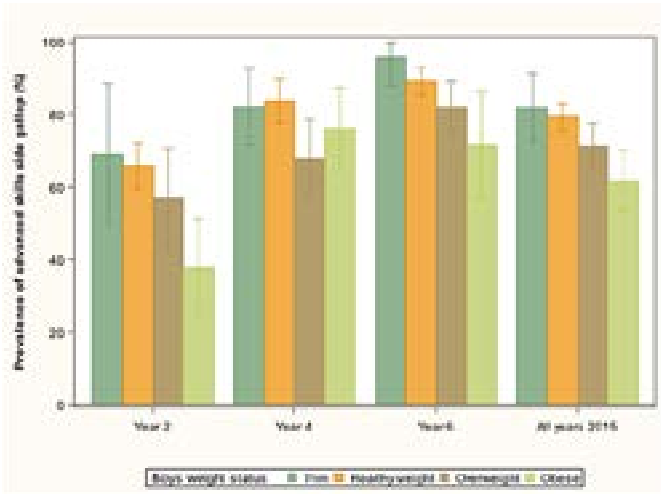

Prevalence of advanced skills side gallop (%)
Year 2
Year 4
Year 6
All years 2015
Girls SES Low Middle High


Prevalence of advanced skills side gallop (%)
Year 2
Year 4
Year 6
All years 2015
Boys SES Low Middle High


Prevalence of advanced skills side gallop (%)
Year 2
Year 4
Year 6
All years 2015
Girls cultural background English European Middle-Eastern Asian


Prevalence of advanced skills side gallop (%)
Year 2
Year 4
Year 6
All years 2015
Boys cultural background English European Middle-Eastern Asian


Prevalence of advanced skills side gallop (%)
Year 2
Year 4
Year 6
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Prevalence of advanced skills side gallop (%)
Year 2
Year 4
Year 6
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

VERTICAL JUMP

The current findings indicate that approximately 45% of boys and 48% of girls demonstrated advanced skills in the vertical jump. Table 9.7 and Figure 9.6 show the prevalence of advanced skills in the vertical jump among children by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, the prevalence of advanced skills in the vertical jump was significantly higher among boys from rural areas (52%), compared with boys from urban areas (43%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the vertical jump significantly increased among children from urban areas, from 32% in 2010 to 45% in 2015; and from rural areas, from 31% in 2010 to 52% in 2015. The prevalence significantly increased among girls from urban areas, from 32% in 2010 to 46% in 2015; and from rural areas, from 31% in 2010 to 52% in 2015. The prevalence significantly increased among boys from urban areas, from 32% in 2010 to 43% in 2015; and from rural areas, from 30% in 2010 to 52% in 2015.

Socio-economic status

2015: Overall, the prevalence of advanced skills in the vertical jump was significantly lower among children from low SES backgrounds (40%), compared with children from high SES backgrounds (49%). The prevalence was significantly lower among boys from low SES backgrounds (39%), compared with boys from high SES backgrounds (48%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the vertical jump significantly increased among children from low SES backgrounds (from 25% in 2010 to 40% in 2015), from middle SES backgrounds (from 32% in 2010 to 47% in 2015), and from high SES backgrounds (from 39% in 2010 to 49% in 2015).

The prevalence significantly increased among girls from low SES backgrounds (from 23% in 2010 to 40% in 2015), from middle SES backgrounds (from 32% in 2010 to 48% in 2015), and from high SES backgrounds (from 41% in 2010 to 51% in 2015). The prevalence significantly increased among boys from low SES backgrounds (from 27% in 2010 to 39% in 2015), from middle SES backgrounds (from 33% in 2010 to 46% in 2015), and from high SES backgrounds (from 36% in 2010 to 48% in 2015).

Cultural background

2015: Overall, the prevalence of advanced skills in the vertical jump was significantly lower among children from Middle Eastern (28%) and Asian cultural backgrounds (37%), compared with children from English-speaking backgrounds (48%). The prevalence was significantly lower among girls from Middle Eastern cultural backgrounds (22%), compared with girls from English-speaking backgrounds (49%); and among boys from Middle Eastern (34%) and Asian cultural backgrounds (34%), compared with boys from English-speaking backgrounds (47%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the vertical jump significantly increased among children from English-speaking backgrounds, from 34% in 2010 to 48% in 2015; from Middle Eastern cultural backgrounds, from 13% in 2010 to 28% in 2015; and among children from Asian cultural backgrounds, from 26% in 2010 to 37% in 2015. The prevalence significantly increased among girls from English-speaking backgrounds, from 33% in 2010 to 49% in 2015; from Middle Eastern cultural backgrounds, from 5% in 2010 to 22% in 2015; and among boys from English-speaking backgrounds, from 34% in 2010 to 47% in 2015.

Weight status

2015: Overall, the prevalence of advanced skills in the vertical jump was significantly lower among children in the overweight BMI (40%) and obese (29%) BMI categories, compared with children in the healthy weight BMI category (51%). The prevalence was significantly lower among girls in the overweight BMI (41%) and obese BMI (27%) categories, compared with girls in the healthy weight BMI category (52%); and among boys in the overweight BMI (39%) and obese (31%) BMI categories, compared with girls in the healthy weight BMI category (49%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the vertical jump significantly increased among children in the thin BMI category, from 32% in 2010 to 53% in 2015; healthy weight BMI category, from 37% in 2010 to 51% in 2015; overweight BMI category from 26% in 2010 to 40% in 2015; and obese BMI category, from 14% in 2010 to 29% in 2015.

The prevalence significantly increased among girls in the thin BMI category, from 35% in 2010 to 54% in 2015; in the healthy weight BMI category, from 37% in 2010 to 52% in 2015; the overweight BMI category, from 25% in 2010 to 41% in 2015; and the obese BMI category, from 16% in 2010 to 27% in 2015. The prevalence significantly increased among boys in the thin BMI category, from 30% in 2010 to 51% in 2015; the healthy weight BMI category, from 37% in 2010 to 49% in 2015; the overweight BMI category from 27% in 2010 to 39% in 2015; and the obese BMI category, from 13% in 2010 to 31% in 2015.

Table 9.7 Prevalence of advanced skills for the vertical jump among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015, and in 2010 for comparison (%, SE)

VERTICAL JUMP	2015				2010
	Year 2	Year 4	Year 6	All years	All years
ALL					
Locality					
Urban (ref)	29.7 (2.2)	48.1 (2.4)	57.0 (2.8)	44.6 (2.1)	**32.0 (1.8) b**
Rural	34.6 (3.5)	57.5 (5.1)	61.9 (2.9)	52.1 (3.6)	**30.8 (4.7) b**
SES					
Low	**23.6 (4.0) a**	45.9 (6.4)	**49.2 (3.6) a**	**39.5 (4.4) a**	**25.0 (2.9) b**
Middle	32.4 (3.1)	51.6 (4.0)	57.2 (4.3)	47.2 (3.1)	**32.3 (1.9) b**
High (ref)	32.9 (2.1)	52.0 (2.4)	63.7 (2.2)	49.2 (1.6)	**38.5 (2.7) b**
Cultural background					
English-speaking (ref)	31.8 (1.8)	52.9 (2.1)	59.4 (2.2)	48.0 (1.7)	**33.5 (1.8) b**
European	31.6 (9.3)	48.2 (10.7)	64.9 (13.0)	46.3 (6.3)	38.8 (8.1)
Middle Eastern	**17.1 (5.7) a**	**25.1 (8.4) a**	**44.8 (5.9) a**	**28.0 (5.3) a**	**13.0 (2.4) b**
Asian	30.4 (6.2)	**34.6 (6.0) a**	50.2 (9.3)	**37.2 (4.4) a**	**25.9 (3.3) b**
BMI category					
Thin	32.1 (7.8)	59.4 (6.5)	63.3 (6.0)	52.7 (3.6)	**32.2 (3.3) b**
Healthy weight (ref)	33.9 (2.2)	55.8 (2.4)	63.2 (2.4)	50.6 (1.9)	**36.8 (1.9) b**
Overweight	26.3 (3.6)	**42.7 (4.0) a**	**47.3 (3.5) a**	**39.7 (2.6) a**	**26.0 (2.2) b**
Obese	**20.7 (4.5) a**	**33.2 (5.0) a**	**33.6 (5.1) a**	**29.0 (3.0) a**	**14.3 (2.4) b**
GIRLS					
Locality					
Urban (ref)	30.6 (2.7)	50.1 (3.0)	60.2 (3.6)	46.3 (2.6)	**31.6 (2.5) b**
Rural	33.4 (4.8)	61.1 (7.4)	58.9 (6.3)	52.0 (5.8)	**31.3 (5.3) b**
SES					
Low	**21.7 (4.3) a**	48.5 (9.7)	**48.8 (6.6) a**	40.1 (6.4)	**23.0 (3.2) b**
Middle	34.0 (4.7)	52.5 (4.9)	58.5 (5.1)	48.2 (4.2)	**32.1 (2.6) b**
High (ref)	32.8 (2.9)	55.2 (2.6)	66.6 (3.2)	50.6 (2.1)	**41.2 (4.0) b**
Cultural background					
English-speaking (ref)	32.0 (2.5)	55.0 (3.1)	61.2 (2.9)	49.2 (2.3)	**33.2 (2.4) b**
European	22.9 (14.9)	82.3 (10.9)	85.3 (9.2)	61.3 (8.5)	39.2 (10.2)
Middle Eastern	12.8 (10.1)	**25.7 (11.6) a**	**30.7 (3.6) a**	**22.4 (6.4) a**	**4.7 (1.9) b**
Asian	37.7 (7.0)	**37.2 (6.3) a**	46.2 (12.0)	39.5 (4.9)	30.7 (5.1)
BMI category					
Thin	26.9 (9.1)	65.8 (8.1)	63.8 (6.4)	54.0 (4.9)	**34.7 (4.4) b**
Healthy weight (ref)	35.0 (3.0)	58.0 (3.6)	65.0 (3.2)	52.2 (2.6)	**36.5 (2.6) b**
Overweight	30.0 (4.4)	**43.5 (4.9) a**	**48.6 (4.7) a**	**40.7 (3.2) a**	**24.9 (2.7) b**
Obese	**12.8 (4.2) a**	**37.6 (5.1) a**	**31.2 (5.6) a**	**27.1 (3.3) a**	**15.7 (3.6) b**

VERTICAL JUMP	2015								2010	
	Year 2		Year 4		Year 6		All years		All years	
BOYS										
Locality										
Urban (ref)	28.7	(2.5)	46.1	(3.1)	53.8	(3.2)	42.8	(2.2)	**32.3**	**(1.6) b**
Rural	35.8	(4.8)	54.0	(5.6)	**64.6**	**(2.7) a**	**52.1**	**(3.4) a**	**30.4**	**(4.9) b**
SES										
Low	25.3	(4.7)	43.4	(5.3)	**49.5**	**(3.4) a**	**39.0**	**(3.5) a**	**27.1**	**(3.3) b**
Middle	30.7	(3.3)	50.5	(4.6)	56.0	(5.2)	46.1	(3.3)	**32.6**	**(1.8) b**
High (ref)	33.0	(2.9)	48.8	(3.6)	60.7	(3.8)	47.5	(2.2)	**36.2**	**(2.5) b**
Cultural background										
English-speaking (ref)	31.5	(2.2)	50.8	(2.4)	57.5	(2.6)	46.9	(1.8)	**33.8**	**(1.8) b**
European	38.0	(13.8)	14.1	(13.4)	32.1	(17.5)	31.0	(8.9)	38.2	(12.3)
Middle Eastern	21.9	(7.9)	**24.3**	**(9.9) a**	57.5	(13.2)	**34.1**	**(6.4) a**	19.9	(5.4)
Asian	20.9	(8.9)	**31.1**	**(8.7) a**	54.0	(10.8)	**34.4**	**(6.1) a**	21.5	(4.4)
BMI category										
Thin	38.7	(12.0)	52.3	(8.5)	62.2	(10.1)	50.9	(4.8)	**29.5**	**(4.7) b**
Healthy weight (ref)	32.8	(2.6)	53.5	(3.0)	61.3	(3.1)	49.0	(2.0)	**37.0**	**(1.8) b**
Overweight	21.4	(5.5)	41.9	(6.1)	**46.3**	**(5.0) a**	**38.6**	**(3.5) a**	**27.0**	**(3.0) b**
Obese	29.3	(7.4)	**28.7**	**(7.8) a**	**36.0**	**(7.5) a**	**31.0**	**(4.3) a**	**13.1**	**(3.4) b**

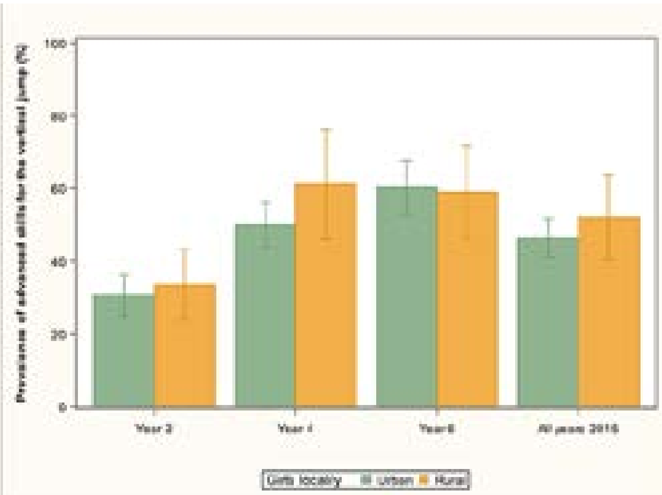
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

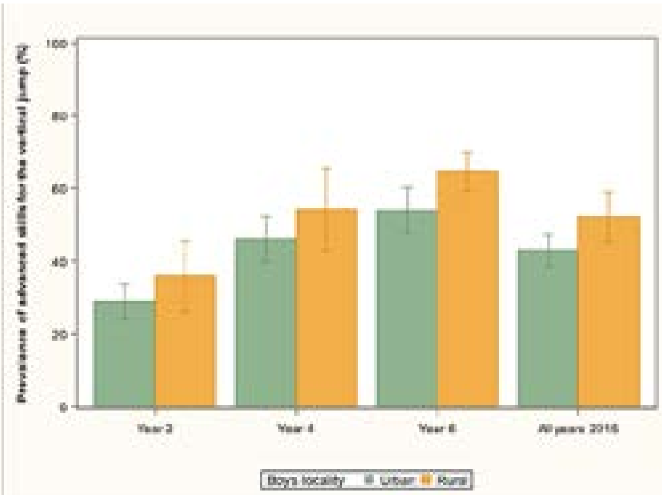
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

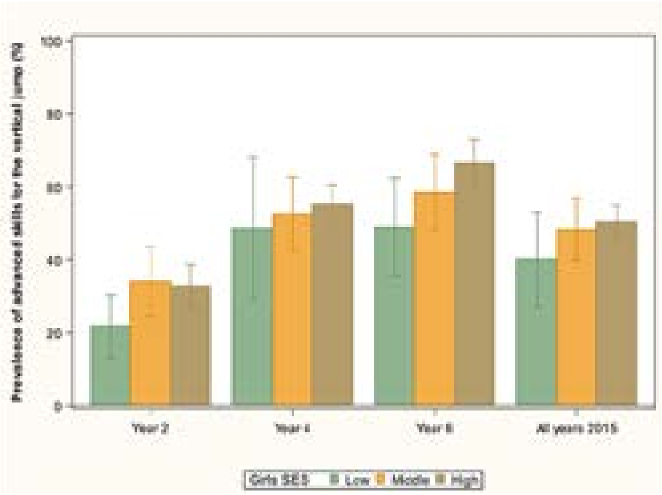
na *Indicates statistical significance could not be calculated due to low numbers.*

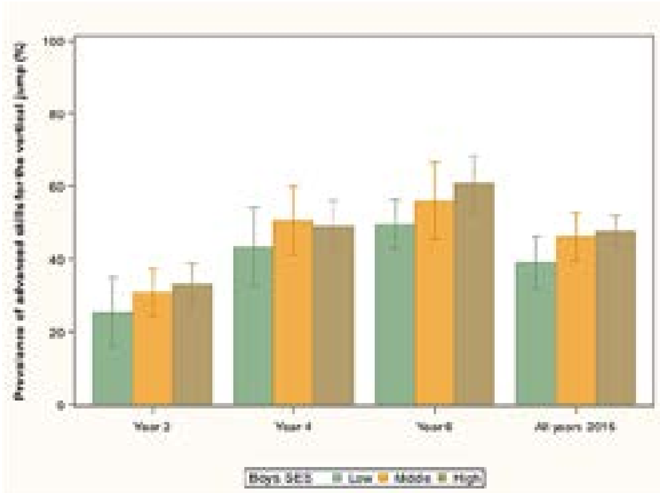
No letter means there was no statistical difference.

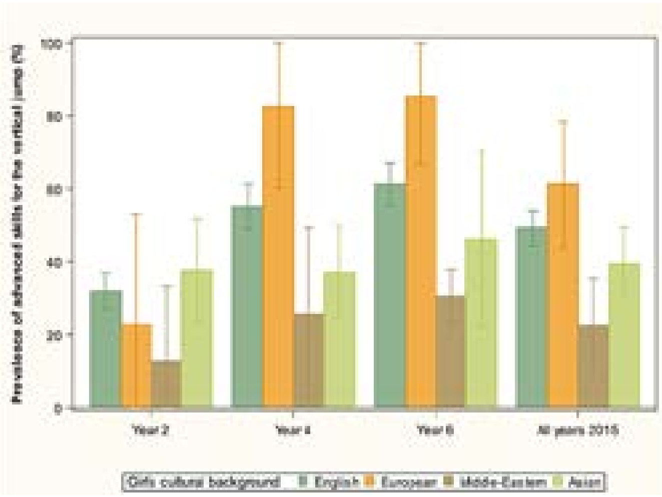
Figure 9.6 Prevalence of advanced skills for the vertical jump among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

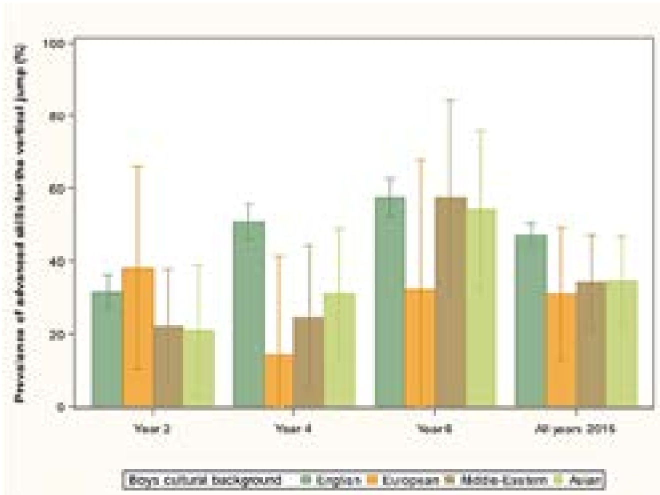


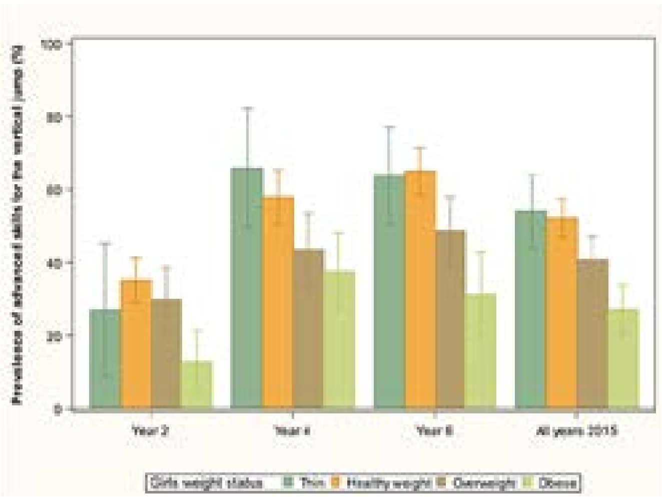


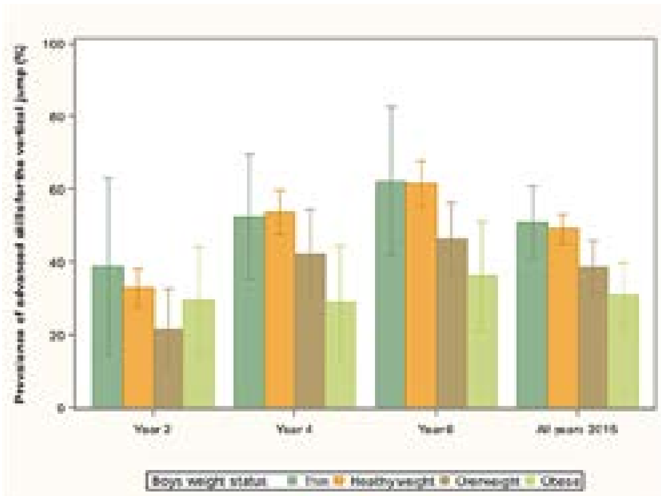

Prevalence of advanced skills for the vertical jump (%)
100
80
60
40
20
0
Year 2
Year 4
Year 6
All years 2015
Girls SES
Low
Middle
High


Prevalence of advanced skills for the vertical jump (%)
100
80
60
40
20
0
Year 2
Year 4
Year 6
All years 2015
Boys SES
Low
Middle
High


Prevalence of advanced skills for the vertical jump (%)
100
80
60
40
20
0
Year 2
Year 4
Year 6
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skills for the vertical jump (%)
100
80
60
40
20
0
Year 2
Year 4
Year 6
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skills for the vertical jump (%)
100
80
60
40
20
0
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of advanced skills for the vertical jump (%)
100
80
60
40
20
0
Year 2
Year 4
Year 6
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

LEAP

The current findings indicate that approximately one in four boys (24%) and one in two girls (49%) demonstrated advanced skills in the leap. The difference was significant between boys and girls. Table 9.8 and Figure 9.7 show the prevalence of advanced skills in the leap among children by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of advanced skills in the leap between children from urban and rural areas.

Change between 2010-2015: Overall, the prevalence of advanced skills in the leap significantly increased among children from urban areas, from 18% in 2010 to 37% in 2015; and from rural areas, from 19% in 2010 to 35% in 2015. The prevalence significantly increased among girls from urban areas, from 24% in 2010 to 49% in 2015; and from rural areas, from 31% in 2010 to 49% in 2015. The prevalence significantly increased among boys from urban areas, from 14% in 2010 to 25% in 2015; and from rural areas, from 10% in 2010 to 22% in 2015.

Socio-economic status

2015: Overall, the prevalence of advanced skills in the leap was significantly lower among children from low SES backgrounds (28%), compared with children from high SES backgrounds (41%). The prevalence was significantly lower among girls from low SES backgrounds (38%), compared with girls from high SES backgrounds (54%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the leap significantly increased among children from low SES backgrounds, from 12% in 2010 to 28% in 2015; from middle SES backgrounds, from 21% in 2010 to 37% in 2015; and from high SES backgrounds, from 21% in 2010 to 41% in 2015.

The prevalence significantly increased among girls from low SES backgrounds, from 16% in 2010 to 38% in 2015; middle SES backgrounds, from 29% in 2010 to 49% in 2015; and high SES backgrounds, from 28% in 2010 to 54% in 2015. The prevalence significantly increased among boys from low SES backgrounds, from 8% in 2010 to 19% in 2015; middle SES backgrounds, from 15% in 2010 to 24% in 2015; and high SES backgrounds, from 15% in 2010 to 27% in 2015.

Cultural background

2015: Overall, the prevalence of advanced skills in the leap was significantly lower among children from Middle Eastern cultural backgrounds (25%), compared with children from English-speaking backgrounds (38%). The prevalence was significantly lower among girls from Middle Eastern cultural backgrounds (24%), compared with girls from English-speaking backgrounds (51%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the leap significantly increased among children from English-speaking backgrounds, from 20% in 2010 to 38% in 2015; from Middle Eastern cultural backgrounds, from 13% in 2010 to 25% in 2015; and among children from Asian cultural backgrounds, from 11% in 2010 to 32% in 2015. The prevalence significantly increased among girls from English-speaking backgrounds, from 26% in 2010 to 51% in 2015; from Middle Eastern cultural backgrounds, from 15% in 2010 to 24% in 2015; and from Asian cultural backgrounds, from 14% in 2010 to 43% in 2015. The prevalence significantly increased among boys from English-speaking backgrounds, from 14% in 2010 to 25% in 2015; and from Asian cultural backgrounds, from 8% in 2010 to 18% in 2015.

Weight status

2015: Overall, the prevalence of advanced skills in the leap was significantly lower among children in the overweight BMI (29%) and obese BMI (26%) categories, compared with children in the healthy weight BMI category (41%). The prevalence was significantly lower among girls in the overweight BMI (39%) and obese (29%) BMI categories, compared with girls in the healthy weight BMI category (55%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the leap significantly increased among children in the thin BMI category, from 18% in 2010 to 40% in 2015; in the healthy weight BMI category, from 22% in 2010 to 41% in 2015; in the overweight BMI category, from 13% in 2010 to 29% in 2015; and in the obese BMI category, from 10% in 2010 to 26% in 2015.

The prevalence significantly increased among girls in the thin BMI category, from 23% in 2010 to 52% in 2015; in the healthy weight BMI category, from 29% in 2010 to 55% in 2015; in the overweight BMI category, from 18% in 2010 to 39% in 2015; and in the obese BMI category, from 15% in 2010 to 29% in 2015. The prevalence significantly increased among boys in the thin BMI category, from 13% in 2010 to 24% in 2015; in the healthy weight BMI category, from 16% in 2010 to 26% in 2015; in the overweight BMI category, from 9% in 2010 to 20% in 2015; and in the obese BMI category, from 6% in 2010 to 23% in 2015.

Table 9.8 Prevalence of advanced skills for the leap among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015, and in 2010 for comparison (%, SE)

LEAP	2015								2010	
	Year 2		Year 4		Year 6		All years		All years	
ALL										
Locality										
Urban (ref)	28.3	(2.4)	40.5	(2.6)	43.6	(3.1)	37.2	(2.3)	**18.4**	**(1.4) b**
Rural	25.4	(4.6)	39.0	(3.4)	40.1	(3.4)	35.2	(3.1)	**19.1**	**(2.9) b**
SES										
Low	**18.4**	**(3.4) a**	**34.6**	**(3.4) a**	**32.4**	**(3.7) a**	**28.4**	**(2.5) a**	**12.2**	**(1.5) b**
Middle	27.1	(2.9)	39.1	(3.1)	43.5	(3.1)	36.7	(2.5)	**21.3**	**(2.0) b**
High (ref)	32.8	(2.8)	44.1	(2.9)	47.7	(3.8)	41.3	(2.5)	**20.8**	**(2.2) b**
Cultural background										
English-speaking (ref)	28.5	(2.0)	42.2	(2.1)	43.3	(2.4)	38.0	(1.8)	**19.6**	**(1.4) b**
European	31.4	(8.2)	38.6	(14.7)	36.8	(12.1)	34.7	(6.6)	19.8	(6.7)
Middle Eastern	**17.1**	**(5.7) a**	**18.3**	**(3.5) a**	**42.4**	**(8.1) a**	**24.9**	**(4.2) a**	**12.8**	**(3.6) b**
Asian	28.6	(4.8)	**29.8**	**(5.7) a**	39.6	(7.7)	32.0	(3.8)	**10.8**	**(1.7) b**
BMI category										
Thin	33.4	(7.0)	38.3	(5.8)	48.3	(6.4)	40.3	(3.8)	**18.1**	**(2.9) b**
Healthy weight (ref)	31.6	(2.2)	44.5	(2.4)	46.6	(3.3)	40.7	(2.1)	**21.7**	**(1.6) b**
Overweight	**19.9**	**(3.6) a**	**34.6**	**(2.9) a**	**31.7**	**(3.3) a**	**29.2**	**(2.2) a**	**12.9**	**(1.4) b**
Obese	**13.8**	**(3.6) a**	**32.4**	**(3.9) a**	**31.5**	**(5.5) a**	**25.7**	**(2.1) a**	**10.1**	**(2.0) b**
GIRLS										
Locality										
Urban (ref)	35.6	(3.9)	53.6	(3.4)	58.8	(4.3)	48.8	(3.2)	**23.7**	**(1.9) b**
Rural	37.7	(7.6)	55.1	(3.7)	53.6	(6.8)	49.4	(5.2)	**31.0**	**(5.8) b**
SES										
Low	**20.7**	**(4.4) a**	49.7	(5.7)	**42.4**	**(5.0) a**	**38.1**	**(4.3) a**	**16.1**	**(1.8) b**
Middle	37.1	(4.7)	50.6	(4.2)	59.8	(5.6)	49.1	(3.8)	**28.5**	**(2.8) b**
High (ref)	41.6	(4.8)	59.2	(3.5)	63.4	(5.1)	54.1	(3.6)	**28.3**	**(3.1) b**
Cultural background										
English-speaking (ref)	37.2	(3.3)	57.8	(2.6)	58.0	(3.6)	50.8	(2.6)	**26.1**	**(2.0) b**
European	44.2	(13.9)	50.2	(16.3)	59.6	(15.8)	51.8	(8.4)	30.1	(10.7)
Middle Eastern	**13.8**	**(8.7) b**	**27.3**	**(6.5) a**	**33.3**	**(8.6) a**	**24.0**	**(4.6) a**	**14.6**	**(2.5) b**
Asian	38.3	(7.1)	**34.5**	**(8.0) a**	63.3	(10.9)	42.9	(5.8)	**13.7**	**(2.2) b**
BMI category										
Thin	40.5	(9.1)	56.2	(7.8)	56.9	(7.3)	52.1	(4.4)	**23.2**	**(4.7) b**
Healthy weight (ref)	42.6	(3.7)	60.8	(3.4)	62.4	(4.7)	54.9	(3.0)	**28.8**	**(2.1) b**
Overweight	**23.9**	**(4.9) a**	**44.9**	**(4.2) a**	**46.7**	**(3.9) a**	**38.6**	**(2.9) a**	**17.6**	**(2.3) b**
Obese	**12.9**	**(4.8) a**	**36.6**	**(6.2) a**	**38.1**	**(6.0) a**	**28.7**	**(3.6) a**	**14.5**	**(3.3) b**

LEAP	2015								2010	
	Year 2		Year 4		Year 6		All years		All years	
BOYS										
Locality										
Urban (ref)	19.8	(2.3)	26.3	(3.0)	28.0	(3.0)	24.7	(2.1)	**13.5**	**(1.6) b**
Rural	13.9	(3.2)	23.1	(4.6)	27.8	(4.5)	21.9	(2.6)	**9.9**	**(2.4) b**
SES										
Low	16.5	(5.2)	19.5	(3.3)	22.5	(4.3)	19.4	(2.8)	**8.1**	**(1.8) b**
Middle	16.2	(3.0)	26.0	(4.6)	28.3	(3.9)	23.7	(2.5)	**15.1**	**(2.0) b**
High (ref)	21.8	(2.8)	28.3	(4.0)	30.7	(3.8)	26.9	(2.7)	**14.6**	**(2.6) b**
Cultural background										
English-speaking (ref)	18.8	(2.0)	26.4	(2.8)	28.3	(2.7)	24.6	(1.8)	**13.9**	**(1.6) b**
European	22.1	(11.4)	27.0	(17.9)	na		17.4	(7.6)	6.9	(6.8)
Middle Eastern	20.9	(9.2)	**6.9**	**(4.9) a**	51.0	(13.5)	25.9	(6.2)	11.3	(4.9)
Asian	16.0	(6.5)	22.9	(7.3)	16.4	(5.2)	18.4	(3.7)	**8.1**	**(2.2) b**
BMI category										
Thin	24.4	(10.1)	18.3	(6.4)	31.7	(8.3)	24.0	(4.6)	**12.6**	**(3.1) b**
Healthy weight (ref)	20.0	(2.1)	27.5	(3.0)	30.6	(3.2)	25.9	(1.9)	**15.5**	**(1.8) b**
Overweight	14.6	(4.8)	22.9	(4.4)	20.1	(4.8)	19.6	(2.9)	**8.5**	**(2.1) b**
Obese	14.8	(6.3)	28.2	(6.9)	24.6	(7.5)	22.5	(4.7)	**6.3**	**(2.5) b**

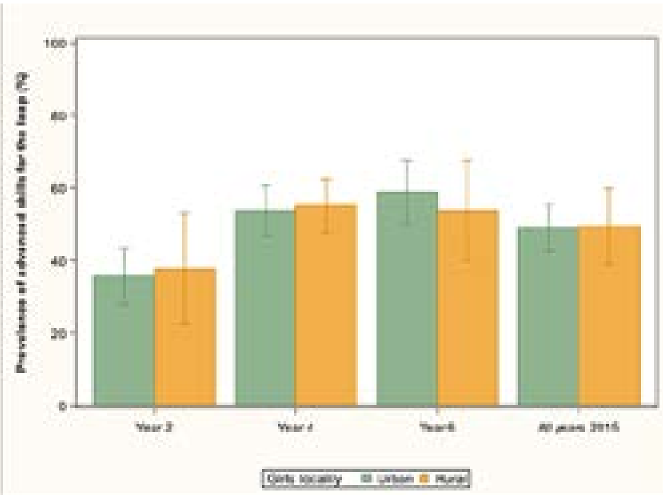
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

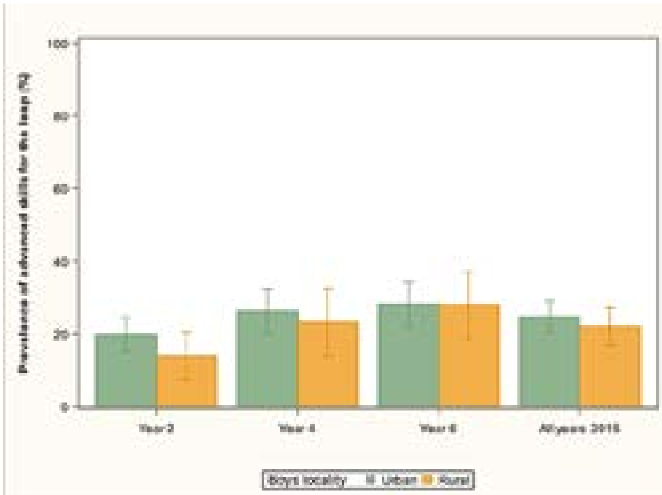
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

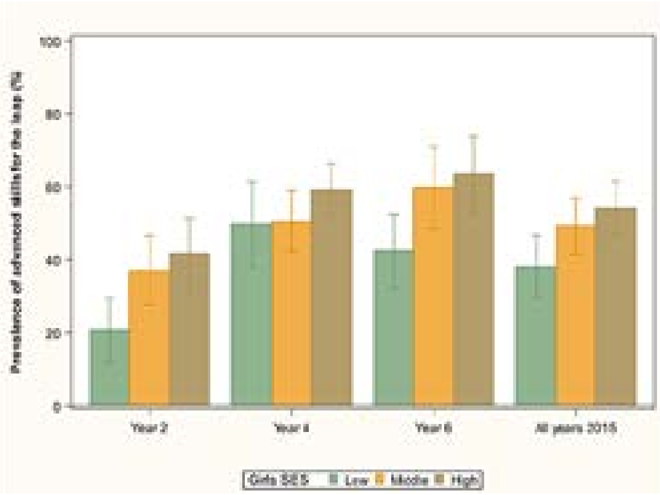
na *Indicates statistical significance could not be calculated due to low numbers.*

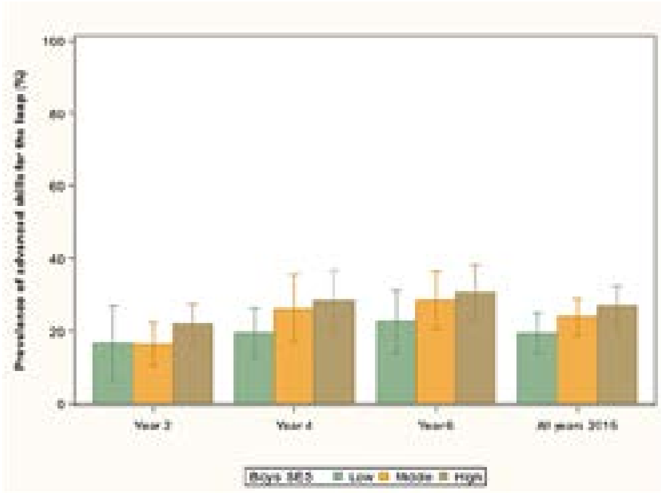
No letter means there was no statistical difference.

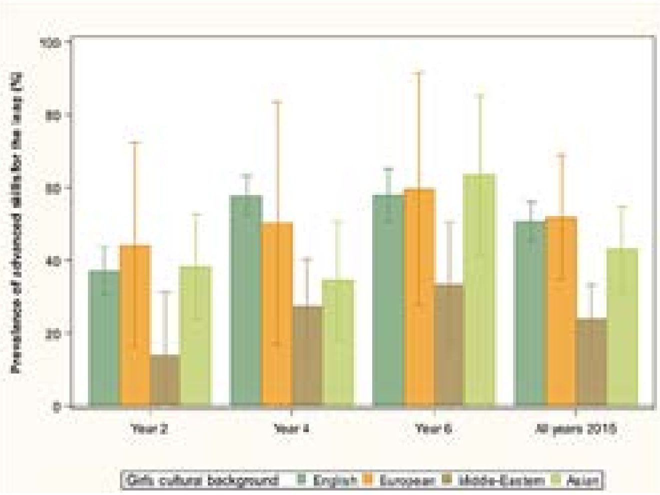
Figure 9.7 Prevalence of advanced skills for the leap among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

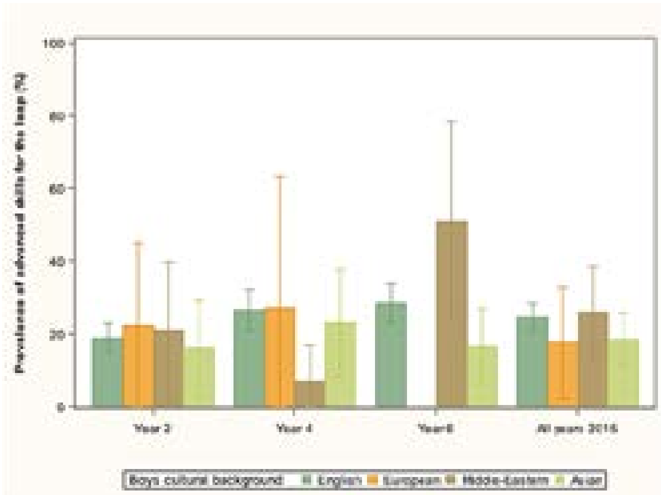


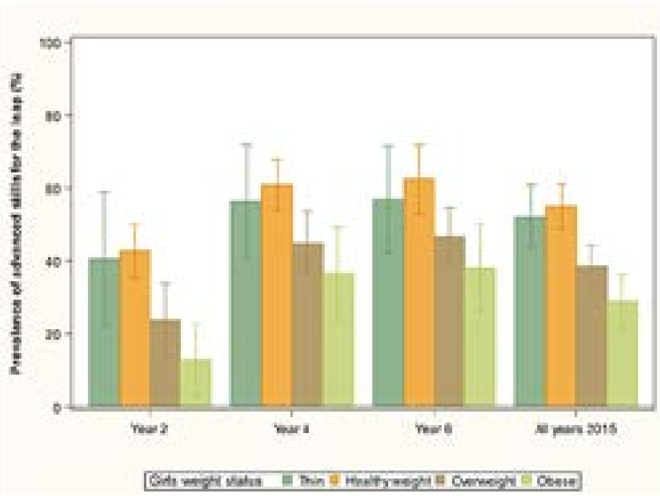


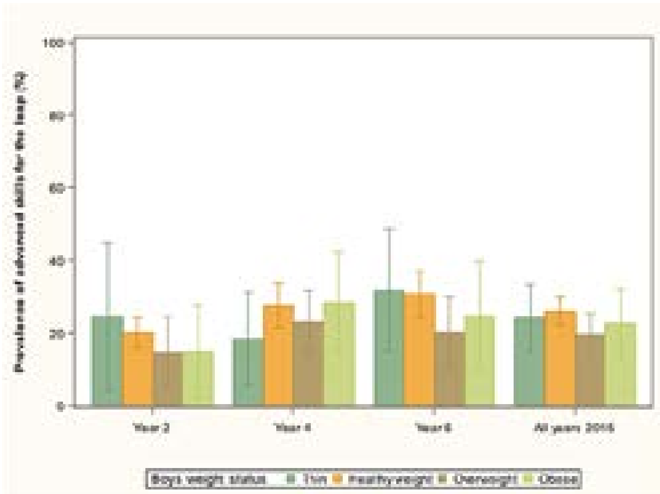

Prevalence of advanced skills for the leap (%)
Year 2
Year 4
Year 6
All years 2015
Girls SES Low Middle High


Prevalence of advanced skills for the leap (%)
Year 2
Year 4
Year 6
All years 2015
Boys SES Low Middle High


Prevalence of advanced skills for the leap (%)
Year 2
Year 4
Year 6
All years 2015
Girls cultural background English European Middle-Eastern Asian


Prevalence of advanced skills for the leap (%)
Year 2
Year 4
Year 6
All years 2015
Boys cultural background English European Middle-Eastern Asian


Prevalence of advanced skills for the leap (%)
Year 2
Year 4
Year 6
All years 2015
Girls weight status Thin Healthy-weight Overweight Obese


Prevalence of advanced skills for the leap (%)
Year 2
Year 4
Year 6
All years 2015
Boys weight status Thin Healthy-weight Overweight Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

SPRINT RUN

The current findings indicate that approximately 52% of boys and 43% of girls demonstrated advanced skills in the sprint run. The difference was significant between boys and girls. Table 9.9 and Figure 9.8 show the prevalence of advanced skills in the sprint run among children by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of advanced skills in the sprint run between children from urban and rural areas.

Change between 2010-2015: Overall, the prevalence of advanced skills in the sprint run significantly increased among boys from urban areas, from 44% in 2010 to 51% in 2015.

Socio-economic status

2015: Overall, the prevalence of advanced skills in the sprint run was significantly lower among children from low SES backgrounds (40%), compared with children from high SES backgrounds (52%). The prevalence was significantly lower among girls from low SES backgrounds (35%), compared with girls from high SES backgrounds (48%); and among boys from low SES backgrounds (44%), compared with boys from high SES backgrounds (55%).

Change between 2010-2015: Overall, there were no significant differences in the prevalence of advanced skills in the sprint run among children from different SES backgrounds between 2010 and 2015.

Cultural background

2015: Overall, the prevalence of advanced skills in the sprint run was significantly lower among children from Middle Eastern cultural backgrounds (33%), compared with children from English-speaking backgrounds (49%). The prevalence was significantly lower among girls from Middle Eastern cultural backgrounds (27%), compared with girls from English-speaking backgrounds (45%); and among boys from Middle Eastern cultural backgrounds (41%), compared with boys from English-speaking backgrounds (54%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the sprint run significantly increased among children from English-speaking backgrounds, from 42% in 2010 to 49% in 2015; and among boys from English-speaking backgrounds, from 45% in 2010 to 54% in 2015.

Weight status

2015: Overall, the prevalence of advanced skills in the sprint run was significantly lower among children in the overweight BMI (37%) and in the obese (24%) BMI categories, compared with children in the healthy weight BMI category (54%). The prevalence was significantly higher among girls in the thin BMI category (61%) and significantly lower among girls in the overweight BMI (27%) and obese (24%) BMI categories, compared with girls in the healthy weight BMI category (49%). The prevalence was significantly lower among boys in the overweight BMI (47%) and obese BMI (25%) categories, compared with boys in the healthy weight BMI category (58%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the sprint run significantly increased among children in the thin BMI category, from 43% in 2010 to 58% in 2015; and in the obese BMI category, from 16% in 2010 to 24% in 2015. The prevalence significantly increased among girls in the thin BMI category (from 42% in 2010 to 61% in 20151), and in the obese BMI category (from 13% in 2010 to 24% in 2015); and among boys in the overweight BMI category, from 36% in 2010 to 47% in 2015.

Table 9.9 Prevalence of advanced skills for the sprint run among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015, and in 2010 for comparison (%, SE)

SPRINT RUN	2015								2010	
	Year 2		Year 4		Year 6		All years		All years	
ALL										
Locality										
Urban (ref)	33.9	(2.5)	49.5	(2.7)	58.0	(2.5)	46.9	(2.1)	40.9	(2.8)
Rural	43.6	(5.2)	50.7	(6.9)	58.4	(5.4)	51.1	(4.9)	45.1	(5.6)
SES										
Low	29.2	(3.7)	**41.2**	**(3.7) a**	**48.6**	**(4.8) a**	**39.5**	**(2.8) a**	35.9	(4.4)
Middle	39.6	(4.1)	47.7	(4.8)	58.1	(4.1)	48.6	(3.6)	43.4	(2.6)
High (ref)	36.3	(3.5)	56.1	(2.6)	63.1	(2.4)	51.5	(2.3)	44.1	(5.0)
Cultural background										
English-speaking (ref)	37.0	(2.5)	51.6	(2.7)	58.9	(2.5)	49.2	(2.0)	**42.3**	**(2.8) b**
European	29.9	(5.8)	50.9	(13.4)	66.1	(15.4)	46.4	(6.9)	51.3	(8.7)
Middle Eastern	21.7	(7.7)	**35.2**	**(6.9) a**	45.8	(8.1)	**33.4**	**(3.1) a**	34.2	(5.0)
Asian	37.5	(5.6)	37.5	(7.3)	57.1	(4.8)	42.7	(3.9)	36.5	(5.2)
BMI category										
Thin	45.3	(6.1)	67.4	(5.5)	59.4	(6.0)	58.2	(3.3)	**43.3**	**(4.7) b**
Healthy weight (ref)	41.0	(2.8)	56.5	(2.7)	64.1	(2.6)	53.6	(2.1)	47.9	(2.8)
Overweight	**26.3**	**(4.1) a**	**35.5**	**(4.1) a**	**45.9**	**(3.7) a**	**36.7**	**(2.8) a**	34.1	(3.1)
Obese	**15.3**	**(3.1) a**	**27.8**	**(4.7) a**	**30.6**	**(5.0) a**	**24.3**	**(2.7) a**	**16.1**	**(3.0) b**
GIRLS										
Locality										
Urban (ref)	30.0	(3.6)	46.3	(3.4)	54.5	(3.5)	43.1	(2.7)	37.5	(3.0)
Rural	35.4	(5.2)	49.6	(6.3)	47.2	(6.6)	44.5	(5.1)	42.3	(7.4)
SES										
Low	23.6	(3.6)	**41.7**	**(5.2) a**	**38.5**	**(5.6) a**	**34.9**	**(2.9) a**	32.1	(5.2)
Middle	34.1	(4.7)	43.5	(4.9)	50.9	(4.8)	42.8	(4.0)	39.7	(2.9)
High (ref)	31.8	(5.0)	53.0	(3.5)	61.6	(4.6)	48.0	(3.3)	42.5	(5.3)
Cultural background										
English-speaking (ref)	32.1	(3.4)	49.1	(3.1)	53.5	(3.2)	44.7	(2.4)	38.9	(3.2)
European	29.6	(14.1)	53.0	(17.6)	59.6	(19.1)	46.8	(10.4)	53.3	(11.6)
Middle Eastern	16.1	(7.4)	**28.4**	**(7.5) a**	37.8	(12.7)	**26.5**	**(3.6) a**	27.1	(5.5)
Asian	32.7	(7.1)	34.1	(7.8)	54.0	(9.2)	38.4	(5.6)	36.0	(5.4)
BMI category										
Thin	48.8	(9.0)	**74.6**	**(7.8) a**	58.1	(7.8)	**60.9**	**(4.4) a**	**41.9**	**(6.0) b**
Healthy weight (ref)	35.4	(3.9)	54.2	(3.4)	59.2	(3.5)	49.2	(2.7)	44.1	(3.2)
Overweight	**17.6**	**(4.1) a**	**27.4**	**(4.8) a**	**35.4**	**(4.9) a**	**26.8**	**(3.1) a**	31.9	(3.7)
Obese	**18.6**	**(5.1) a**	**26.0**	**(6.4) a**	**26.5**	**(6.7) a**	**23.6**	**(3.5) a**	**13.0**	**(3.3) b**

SPRINT RUN	2015								2010	
	Year 2		Year 4		Year 6		All years		All years	
BOYS										
Locality										
Urban (ref)	38.3	(3.1)	52.9	(3.0)	61.7	(3.0)	50.9	(2.2)	**43.9**	**(3.0) b**
Rural	50.8	(7.3)	51.9	(8.8)	68.6	(5.5)	57.2	(5.9)	47.3	(5.2)
SES										
Low	33.9	(6.0)	**40.6**	**(5.5) b**	58.4	(4.5)	**43.8**	**(3.7) a**	39.7	(4.3)
Middle	45.5	(5.7)	52.5	(5.4)	64.7	(4.8)	54.6	(4.0)	46.7	(3.1)
High (ref)	41.9	(3.2)	59.4	(2.9)	64.7	(3.4)	55.4	(2.3)	45.4	(5.2)
Cultural background										
English-speaking (ref)	42.5	(3.2)	54.1	(3.2)	64.4	(2.8)	53.8	(2.3)	**45.3**	**(2.9) b**
European	30.1	(10.3)	48.8	(19.7)	76.5	(20.7)	46.0	(11.3)	48.8	(13.2)
Middle Eastern	28.0	(8.2)	43.1	(10.1)	53.3	(10.4)	**41.0**	**(6.1) a**	40.3	(6.7)
Asian	43.8	(11.2)	42.1	(10.4)	60.2	(8.3)	48.2	(5.0)	37.0	(6.7)
BMI category										
Thin	41.0	(9.8)	59.8	(7.4)	61.8	(9.1)	54.6	(4.9)	44.7	(5.1)
Healthy weight (ref)	46.9	(3.8)	58.8	(3.6)	69.1	(3.6)	58.1	(2.5)	51.3	(2.9)
Overweight	37.7	(5.9)	**44.3**	**(5.1) a**	**54.2**	**(4.7) a**	**46.8**	**(3.2) a**	**36.2**	**(4.1) b**
Obese	**11.7**	**(4.6) a**	**29.7**	**(5.9) a**	**34.9**	**(7.9) a**	**25.1**	**(4.0) a**	18.8	(4.4)

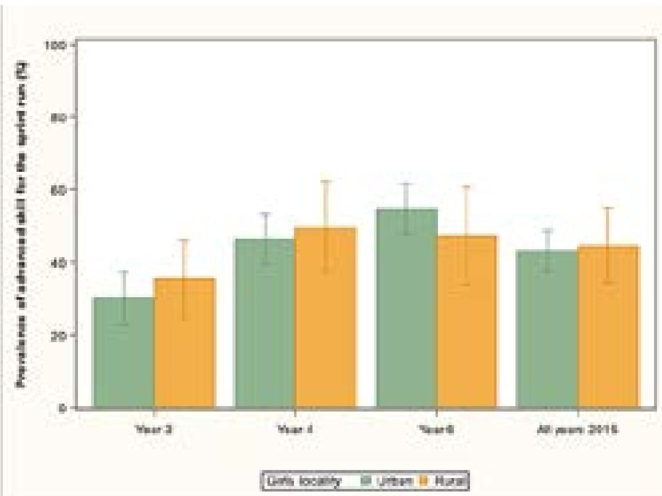
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

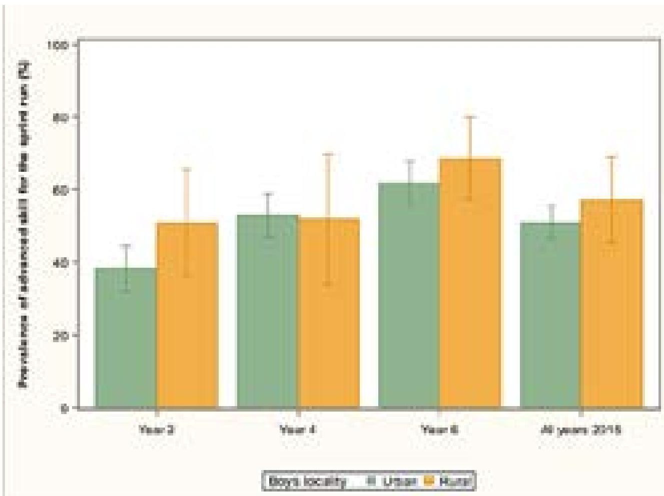
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

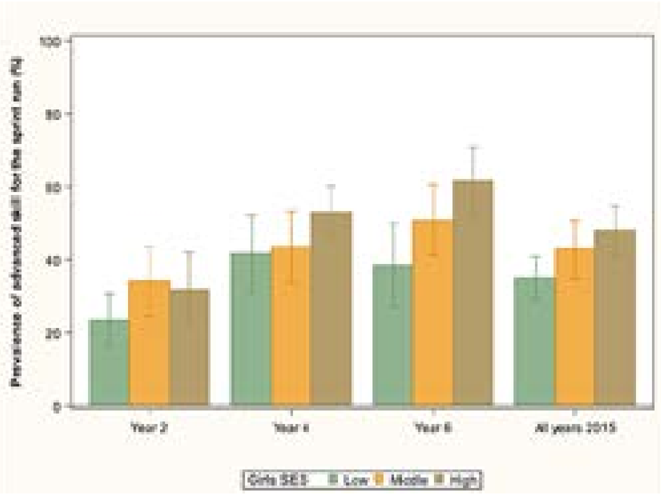
na *Indicates statistical significance could not be calculated due to low numbers.*

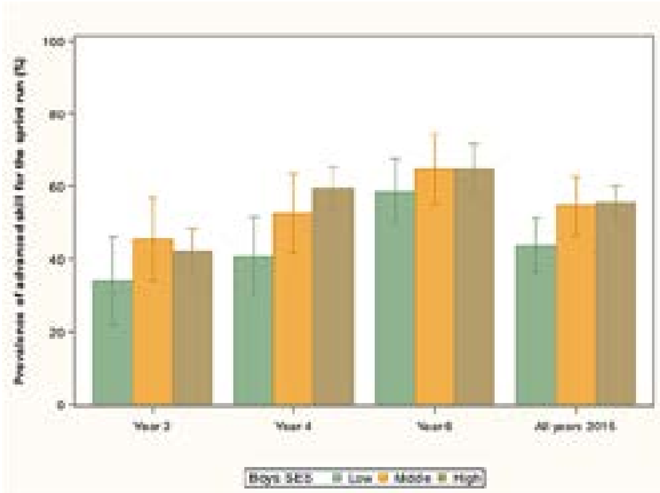
No letter means there was no statistical difference.

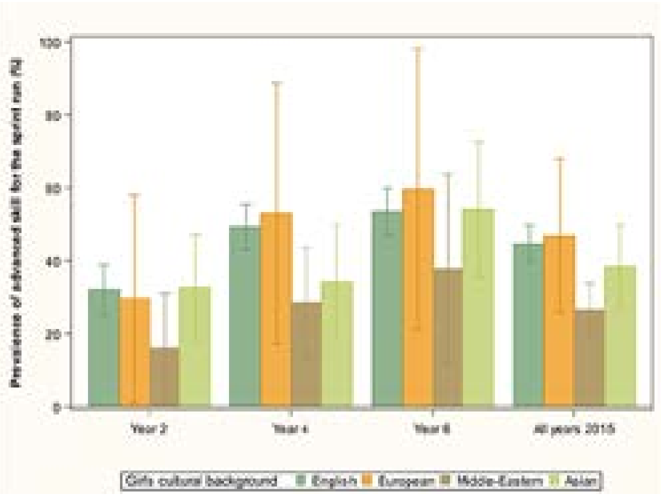
Figure 9.8 Prevalence of advanced skills for the sprint run among primary school children by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

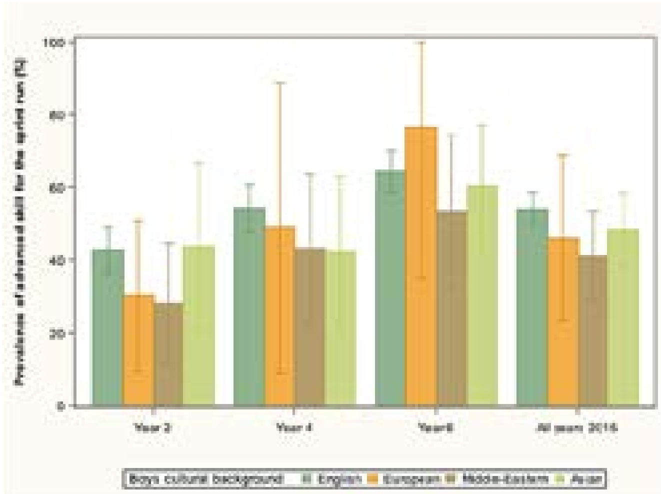


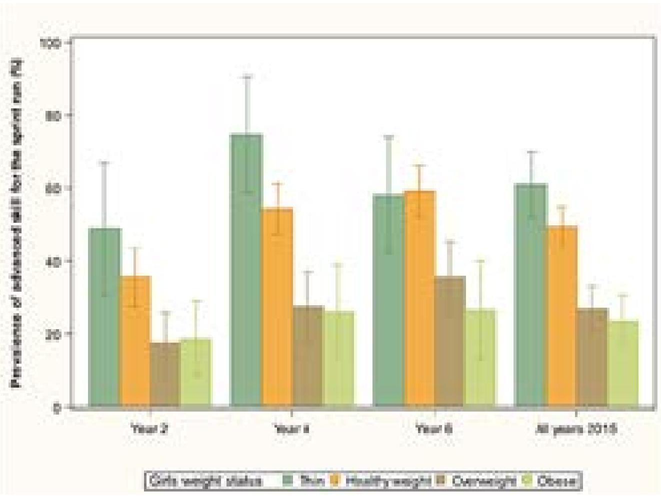


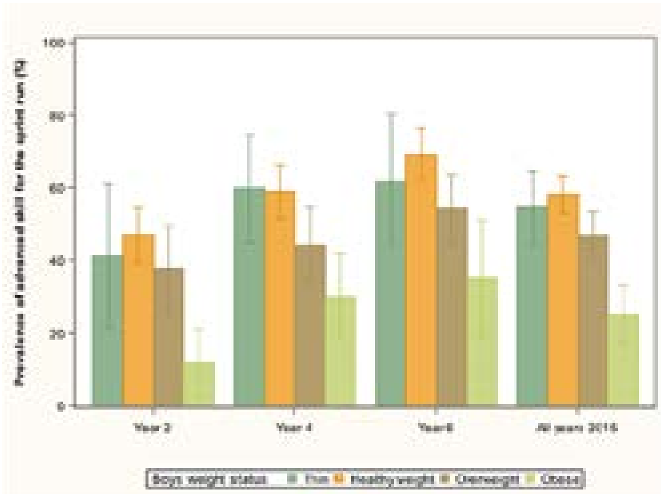

Prevalence of advanced skill for the sprint run (%)
Year 2
Year 4
Year 6
All years 2015
Girls SES
Low
Middle
High


Prevalence of advanced skill for the sprint run (%)
Year 2
Year 4
Year 6
All years 2015
Boys SES
Low
Middle
High


Prevalence of advanced skill for the sprint run (%)
Year 2
Year 4
Year 6
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skill for the sprint run (%)
Year 2
Year 4
Year 6
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skill for the sprint run (%)
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of advanced skill for the sprint run (%)
Year 2
Year 4
Year 6
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

MASTERY OF INDIVIDUAL FMS COMPONENTS

Knowing the prevalence of mastery of each FMS component is important in terms of fundamental movement skill pedagogy. The prevalence of mastery for each component of each FMS among boys and girls in Years 2, 4 and 6 are given in Table 9.10 and Table 9.11, respectively. Identifying particular skill components where children are less proficient is a useful guide for those involved in the delivery of programs that target FMS development.

Table 9.10 Prevalence of mastery for each FMS component among boys, by year group (%)

SKILL AND SKILL COMPONENTS	Year 2	Year 4	Year 6
Catch			
Eyes focused on the object throughout the catch	94.7	95.6	99.8
Feet move to place the body in line with the object	55.0	72.2	76.0
Hands move to meet the object	90.0	94.0	98.6
Hands and fingers relaxed and slightly cupped to catch the object	63.9	79.0	87.9
Catch and control object with hands only (well-timed closure)	58.8	81.1	92.4
Elbows bend to absorb the force of the object	46.7	66.1	80.6
Kick			
Eyes focused on the ball throughout the kick	92.7	96.2	99.5
Forward and sideward swing of arm opposite kicking	34.7	64.3	73.6
Non-kicking foot placed beside the ball	56.5	76.0	81.9
Bend knee of kicking leg at least 90 degrees during the back swing	62.7	79.7	87.9
Contact ball with top of the foot (a "shoelace" kick) or instep	45.0	58.2	70.6
Kicking leg follows through high towards the target area	63.8	80.6	82.4
Over-arm throw			
Eyes focused on target throughout the throw	92.4	95.7	99.3
Stands side-on to target area	55.5	72.0	80.2
Throwing arm moves in a downward and backward arc	68.9	84.6	90.3
Step towards target area with foot opposite throwing arm	61.9	81.1	88.0
Hips then shoulders rotate forward	29.2	47.7	66.1
Throwing arm follows through down and across the body	45.0	66.5	78.8
Side gallop			
Smooth rhythmical movement	64.1	78.0	86.1
Brief period where both feet are off the ground	80.3	88.3	93.8
Weight on the balls of the feet	66.0	76.6	84.3
Hips and shoulders point to the front	72.5	81.2	89.4
Head stable, eyes focused forward or in the direction of travel	83.0	91.2	94.9
Vertical jump			
Eyes focused forward or upward throughout the jump	89.4	92.3	96.8
Crouch with knees bent and arms behind the body	49.0	56.6	67.9
Forceful forward and upward swing of the arms	44.3	58.8	64.1
Legs straighten in the air	69.9	77.6	85.8
Lands on balls of the feet and bends knees to absorb landing	44.5	53.2	62.9
Controlled landing with no more than one step in any direction	67.5	80.2	85.7

SKILL AND SKILL COMPONENTS	Year 2	Year 4	Year 6
Leap			
Eyes focused forward throughout the leap	91.1	91.9	96.5
Knee of take-off leg bends	51.2	58.0	65.3
Legs straighten during flight	28.8	38.2	42.4
Arms held in opposition to the legs	30.4	36.9	44.4
Trunk leans slightly forward	75.8	81.7	84.7
Lands on ball of the foot and bends knee to absorb landing	33.2	34.7	38.3
Sprint run			
Lands on ball of the foot	51.3	59.9	67.7
Non-support knee bent at least 90 degrees during the recovery phase	67.0	76.6	81.0
High knee lift, thigh almost parallel to the ground	38.1	47.8	55.0
Head and trunk stable, eyes focused forward	87.4	90.9	93.6
Elbows bent at 90 degrees	69.4	73.6	80.4
Arms drive forward and back in opposition to legs	79.9	83.7	89.1

Table 9.11 Prevalence of mastery for each FMS component among girls, by year group (%)

SKILL AND SKILL COMPONENTS	Year 2	Year 4	Year 6
Catch			
Eyes focused on the object throughout the catch	94.0	96.3	99.7
Feet move to place the body in line with the object	41.5	63.6	71.6
Hands move to meet the object	87.9	94.1	98.4
Hands and fingers relaxed and slightly cupped to catch the object	56.5	71.9	84.3
Catch and control object with hands only (well-timed closure)	47.9	67.3	85.0
Elbows bend to absorb the force of the object	30.9	54.3	68.4
Kick			
Eyes focused on the ball throughout the kick	91.8	94.7	98.7
Forward and sideward swing of arm opposite kicking	14.2	27.7	38.9
Non-kicking foot placed beside the ball	29.7	49.2	59.9
Bend knee of kicking leg at least 90 degrees during the back swing	43.4	61.1	60.8
Contact ball with top of the foot (a "shoelace" kick) or instep	20.6	28.7	42.7
Kicking leg follows through high towards the target area	51.0	63.7	62.3
Over-arm throw			
Eyes focused on target throughout the throw	92.0	94.7	99.2
Stands side-on to target area	26.6	42.1	51.1
Throwing arm moves in a downward and backward arc	55.0	70.2	75.1
Step towards target area with foot opposite throwing arm	41.7	60.3	70.9
Hips then shoulders rotate forward	12.4	22.2	28.2
Throwing arm follows through down and across the body	28.6	41.1	50.2
Side gallop			
Smooth rhythmical movement	75.0	83.1	91.3
Brief period where both feet are off the ground	86.3	91.1	94.6
Weight on the balls of the feet	67.7	76.7	84.0
Hips and shoulders point to the front	71.7	81.9	90.5
Head stable, eyes focused forward or in the direction of travel	87.1	91.9	96.2

SKILL AND SKILL COMPONENTS	Year 2	Year 4	Year 6
Vertical jump			
Eyes focused forward or upward throughout the jump	92.0	92.3	96.6
Crouch with knees bent and arms behind the body	42.5	59.2	59.7
Forceful forward and upward swing of the arms	47.0	60.3	66.3
Legs straighten in the air	69.9	79.0	86.2
Lands on balls of the feet and bends knees to absorb landing	41.8	56.1	67.1
Controlled landing with no more than one step in any direction	77.9	82.9	89.2
Leap			
Eyes focused forward throughout the leap	93.4	91.7	98.5
Knee of take-off leg bends	67.6	76.1	81.0
Legs straighten during flight	52.1	63.6	71.1
Arms held in opposition to the legs	42.6	59.4	56.3
Trunk leans slightly forward	84.8	88.5	93.2
Lands on ball of the foot and bends knee to absorb landing	44.1	52.4	57.2
Sprint run			
Lands on ball of the foot	37.7	57.2	60.7
Non-support knee bent at least 90 degrees during the recovery phase	64.5	73.8	80.2
High knee lift, thigh almost parallel to the ground	36.2	43.4	55.5
Head and trunk stable, eyes focused forward	89.4	90.4	96.8
Elbows bent at 90 degrees	66.4	71.7	77.2
Arms drive forward and back in opposition to legs	69.5	76.5	79.3

SUMMARY OF THE FUNDAMENTAL MOVEMENT SKILL PROFICIENCY OF CHILDREN IN PRIMARY SCHOOL

The table below summarises the prevalence of advanced skills for each FMS, by sex among children in primary school

FMS	Australian guidelines	SPANS benchmark	Prevalence (%)			Significant subgroup findings for 2015* & change between 2010-2015
			Sex	2010	2015	
Catch	There are no specific guidelines	Advanced skills	Girls	41%	53% sig	**2015:** Overall, the proportion of children demonstrating advanced skill in the catch was significantly higher among children from rural areas, and significantly lower among children from Middle Eastern cultural backgrounds and children in the obese BMI category **Change between 2010-15**: Overall, the proportion of children demonstrating advanced skill in the catch has significantly increased between 2010 and 2015. Within subgroups, the prevalence significantly increased among children from rural and urban areas, low and middle SES backgrounds, English-speaking and Asian cultural backgrounds and those in the healthy weight and overweight BMI categories
			Boys	59%	67% sig	
Kick	There are no specific guidelines	Advanced skills	Girls	9%	16% sig	**2015:** Overall, the proportion of children demonstrating advanced skill in the kick was significantly lower among children from Asian cultural backgrounds and children in the thin and obese BMI categories **Change between 2010-15**: Overall, the proportion of children demonstrating advanced skill in the kick has significantly increased between 2010 and 2015. Within subgroups the prevalence significantly increased among children from rural and urban areas, low SES backgrounds, English-speaking backgrounds and those in the healthy weight, overweight and obese BMI categories
			Boys	42%	54% sig	
Over-arm throw	There are no specific guidelines	Advanced skills	Girls	11%	18% sig	**2015:** Overall, the proportion of children demonstrating advanced skill in the over-arm throw was significantly lower among children from Asian cultural backgrounds and in the obese BMI category **Change between 2010-15**: Overall, the proportion of children demonstrating advanced skill in the over-arm throw has significantly increased between 2010 and 2015. Within subgroups, the prevalence significantly increased among children from urban areas, low SES backgrounds, English-speaking backgrounds and in the overweight BMI category
			Boys	44%	52% sig	
Side gallop	There are no specific guidelines	Advanced skills	Girls	67%	80% sig	**2015:** Overall, the proportion of children demonstrating advanced skill in the side gallop was significantly lower among children from low SES backgrounds, Middle Eastern cultural backgrounds and in the overweight and obese BMI categories **Change between 2010-15**: Overall, the proportion of children demonstrating advanced skill in the side gallop has significantly increased between 2010 and 2015. Within subgroups, the prevalence significantly increased among children from rural and urban areas, each SES tertile, English-speaking and Asian cultural backgrounds and in each BMI category
			Boys	61%	75% sig	

FMS	Australian guidelines	SPANS benchmark	Prevalence (%)			Significant subgroup findings for 2015* & change between 2010-2015
			Sex	2010	2015	
Vertical jump	There are no specific guidelines	Advanced skills	Girls	32%	48% sig	**2015:** Overall, the proportion of children demonstrating advanced skill in the vertical jump was significantly lower among children from low SES backgrounds, Middle Eastern and Asian cultural backgrounds and the overweight and obese BMI categories
			Boys	32%	45% sig	**Change between 2010-15**: Overall, the proportion of children demonstrating advanced skill in the vertical jump has significantly increased between 2010 and 2015. Within sub-groups the prevalence significantly increased among children from rural and urban areas, in each SES tertile, from English-speaking Middle Eastern and Asian cultural backgrounds, and in each BMI category
Leap	There are no specific guidelines	Advanced skills	Girls	25%	49% sig	**2015:** Overall, the proportion of children demonstrating advanced skill in the leap was significantly lower among children from low SES backgrounds, Middle Eastern and Asian cultural backgrounds, and in the overweight and obese BMI categories
			Boys	13%	24% sig	**Change between 2010-15**: Overall, the proportion of children demonstrating advanced skill in the leap has significantly increased between 2010 and 2015. Within subgroups, the prevalence significantly increased among children from rural and urban areas, in each SES tertile, from English-speaking, Middle Eastern and Asian cultural backgrounds, and each BMI category
Sprint run	There are no specific guidelines	Advanced skills	Girls	38%	43%	**2015:** Overall, the proportion of children demonstrating advanced skill in the sprint run was significantly lower among children from low SES backgrounds, Middle Eastern cultural backgrounds, and the overweight and obese BMI categories
			Boys	44%	52% sig	**Change between 2010-15**: Overall, the proportion of children demonstrating advanced skill in the leap has significantly increased between 2010 and 2015. Within subgroups, the prevalence significantly increased among children from English-speaking backgrounds, and in the thin and obese BMI categories

sig *Indicates statistically significant difference at $P < 0.05$. *Comparisons are between rural compared with urban; low and middle SES compared with high SES; and European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

SECONDARY SCHOOL

The following section describes the fundamental movement skill proficiency of adolescents in Years 8 and 10 in secondary schools participating in SPANS. A field officer assessed the skills individually during the school visit. The prevalence (%) estimates need to be interpreted along with their standard errors (SE); a large standard error means a less precise estimate.

MASTERY AND NEAR-MASTERY OF FMS

Table 9.12 and Figure 9.9 show the prevalence of mastery (demonstrates all components of skill), near-mastery (demonstrates all but one components of skill) and advanced skills (mastery + near mastery) of each of the seven FMS among adolescents by sex and year group in 2015. Table 9.13 shows the prevalence overall in 2015 and in 2010 for comparison.

CATCH

2015: Overall, the prevalence of advanced skills for the catch was significantly higher among boys (87%), compared with girls (74%).

Change between 2010-2015: Overall, there were no significant changes in the prevalence of advanced skills for the catch among adolescents between 2010 and 2015.

KICK

2015: Overall, the prevalence of advanced skills for the kick was significantly higher among boys (74%), compared with girls (33%).

Change between 2010-2015: Overall, there were no significant changes in the prevalence of advanced skills for the kick among adolescents between 2010 and 2015.

OVER-ARM THROW

2015: Overall, the prevalence of advanced skills for the over-arm throw was significantly higher among boys (67%), compared with girls (30%).

Change between 2010-2015: Overall, there were no significant changes in the prevalence of advanced skills for the over-arm throw among adolescents between 2010 and 2015.

SIDE GALLOP

2015: Overall, there was no significant difference in the prevalence of advanced skills for the side gallop between boys and girls.

Change between 2010-2015: Overall, the prevalence of advanced skills for the side gallop significantly increased among boys from 88% in 2010 to 93% in 2015.

VERTICAL JUMP

2015: Overall, there were no significant differences in the prevalence of advanced skills for the vertical jump between boys and girls.

Change between 2010-2015: Overall, the prevalence of advanced skills for the vertical jump significantly increased among boys, from 64% in 2010 to 74% in 2015; and among girls, from 57% in 2010 to 67% in 2015.

LEAP

2015: Overall, the prevalence of advanced skills for the leap was significantly lower among boys (35%), compared with girls (54%).

Change between 2010-2015: Overall, the prevalence of advanced skills for the leap significantly increased among boys, from 19% in 2010 to 35% in 2015.

SPRINT RUN

2015: Overall, the prevalence of advanced skills for the sprint run was significantly higher among boys (70%), compared with girls (55%).

Change between 2010-2015: Overall, the prevalence of advanced skills for the sprint run significantly increased among boys, from 62% in 2010 to 70% in 2015.

Table 9.12 Prevalence of mastery, near-mastery and advanced skills for each FMS among adolescents in secondary school by sex and year group in 2015 (%, SE)

DAYS	Year 8					Year 10				
	Boys		Girls			Boys		Girls		
OBJECT CONTROL SKILLS										
CATCH										
Near-mastery	23.1	(2.1)	24.2	(2.5)		23.0	(2.9)	25.7	(3.4)	
Mastery	61.7	(3.6)	47.5	(3.2)		66.7	(3.2)	50.4	(4.7)	
Advanced	84.9	(2.2)	**71.7**	**(2.8)**	**a**	89.7	(1.5)	**76.1**	**(3.0)**	**a**
KICK										
Near-mastery	20.2	(1.7)	14.7	(1.5)		20.7	(2.4)	18.4	(2.2)	
Mastery	49.8	(3.2)	13.3	(1.9)		56.4	(3.4)	20.4	(3.4)	
Advanced	70.0	(3.1)	**28.0**	**(2.4)**	**a**	77.0	(2.4)	**38.9**	**(3.5)**	**a**
OVER-ARM THROW										
Near-mastery	21.2	(2.5)	13.3	(1.8)		16.7	(1.9)	15.5	(2.0)	
Mastery	43.4	(4.1)	15.3	(2.1)		52.3	(3.4)	16.7	(2.3)	
Advanced	64.5	(3.5)	**28.6**	**(3.1)**	**a**	68.9	(2.9)	**32.2**	**(3.2)**	**a**
LOCOMOTOR SKILLS										
SIDE GALLOP										
Near-mastery	16.3	(2.0)	13.7	(1.6)		12.9	(1.8)	10.5	(1.9)	
Mastery	75.5	(2.4)	76.6	(2.6)		81.6	(2.1)	84.9	(2.9)	
Advanced	91.9	(1.4)	90.3	(1.9)		94.5	(1.1)	95.4	(1.8)	
VERTICAL JUMP										
Near-mastery	30.2	(2.3)	27.7	(2.4)		26.7	(2.0)	25.3	(2.5)	
Mastery	41.3	(2.4)	37.3	(2.9)		50.2	(3.1)	43.9	(3.7)	
Advanced	71.5	(2.6)	65.0	(3.1)		76.8	(3.2)	69.2	(3.6)	
LEAP										
Near-mastery	18.6	(1.8)	25.4	(2.1)		26.0	(2.5)	21.7	(2.1)	
Mastery	14.6	(2.3)	26.6	(3.0)		11.7	(1.9)	34.0	(3.3)	
Advanced	33.2	(2.9)	**52.0**	**(3.4)**	**a**	37.6	(3.3)	**55.7**	**(3.5)**	**a**
SPRINT RUN										
Near-mastery	25.3	(2.1)	28.1	(2.6)		28.0	(2.9)	23.4	(2.3)	
Mastery	42.5	(3.4)	25.6	(2.9)		44.9	(3.9)	33.0	(4.1)	
Advanced	67.8	(3.3)	**53.7**	**(3.8)**	**a**	73.0	(3.2)	**56.3**	**(3.9)**	**a**

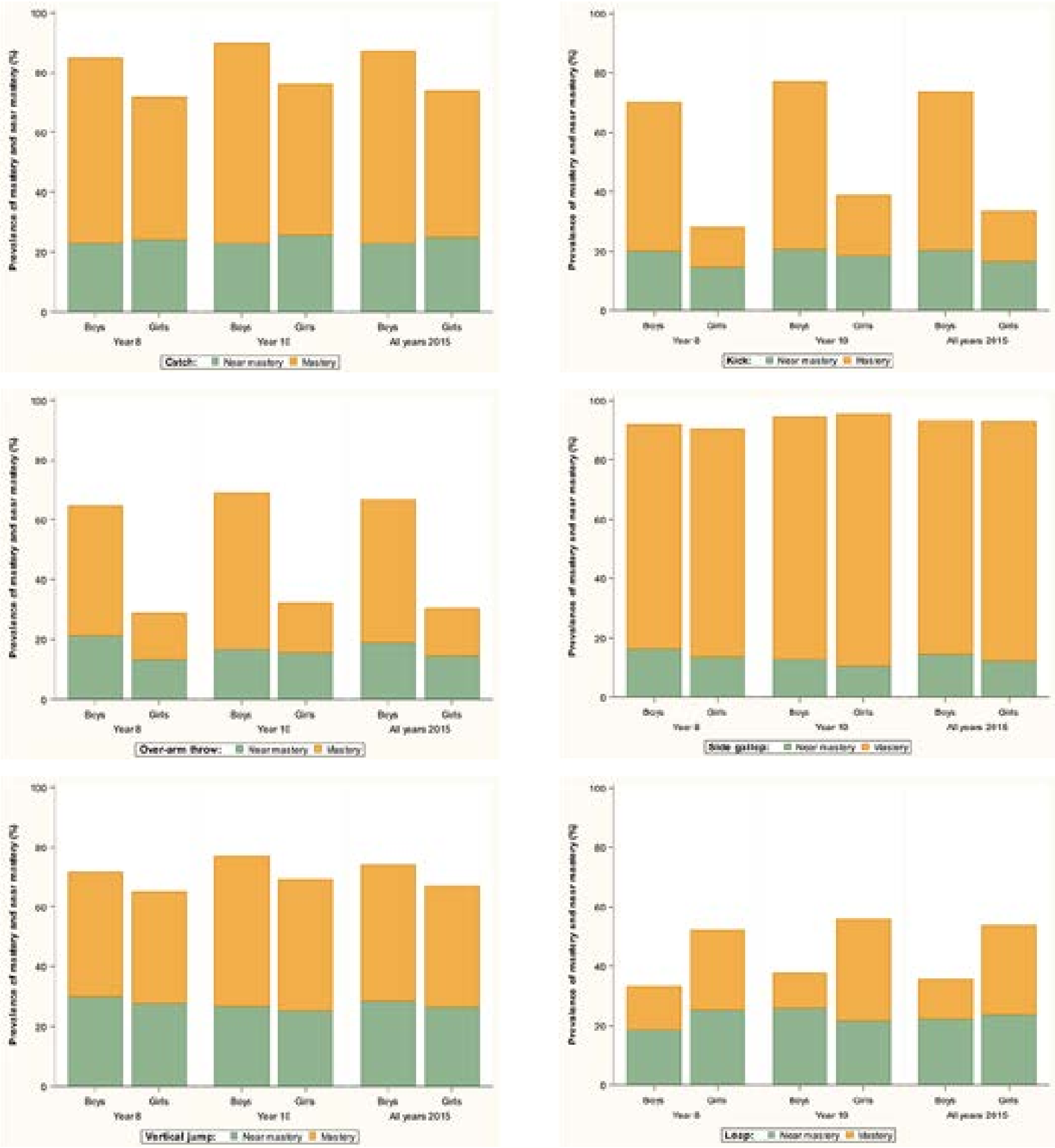
a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

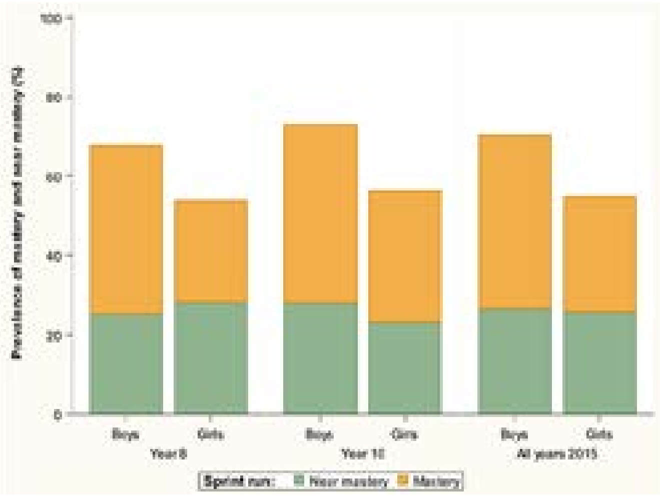
Table 9.13 Prevalence of mastery, near-mastery and advanced skills for each FMS among adolescents in secondary school by sex in 2015, and in 2010 for comparison (%, SE)

DAYS	All years 2015				All years 2010			
	Boys		Girls		Boys		Girls	
OBJECT CONTROL SKILLS								
CATCH								
Near-mastery	23.0	(1.9)	25.0	(2.3)	16.1	(1.2)	24.9	(1.6)
Mastery	64.2	(2.6)	49.0	(3.2)	73.2	(1.6)	53.7	(2.6)
Advanced	87.2	(1.3)	**73.9**	**(2.3) a**	89.3	(1.4)	78.6	(1.9)
KICK								
Near-mastery	20.4	(1.5)	16.5	(1.3)	22.2	(1.4)	13.6	(1.0)
Mastery	53.1	(2.5)	16.9	(2.3)	50.6	(2.5)	13.8	(1.6)
Advanced	73.5	(2.0)	**33.4**	**(2.3) a**	72.8	(2.4)	27.4	(2.2)
OVER-ARM THROW								
Near-mastery	19.0	(1.7)	14.4	(1.5)	27.2	(1.8)	14.2	(1.1)
Mastery	47.8	(3.4)	16.0	(2.0)	44.9	(2.1)	11.6	(1.3)
Advanced	66.7	(2.8)	**30.4**	**(2.7) a**	72.1	(2.0)	25.9	(1.7)
LOCOMOTOR SKILLS								
SIDE GALLOP								
Near-mastery	14.6	(1.3)	12.1	(1.4)	28.1	(1.6)	25.1	(1.8)
Mastery	78.6	(1.5)	80.7	(2.5)	59.3	(2.0)	68.5	(1.9)
Advanced	93.2	(0.8)	92.8	(1.6)	**87.5**	**(1.4) b**	93.5	(0.8)
VERTICAL JUMP								
Near-mastery	28.4	(1.6)	26.5	(1.8)	23.3	(1.4)	24.6	(1.4)
Mastery	45.7	(2.2)	40.6	(2.6)	40.7	(2.2)	32.5	(2.9)
Advanced	74.2	(2.5)	67.1	(2.8)	**64.0**	**(2.0) b**	**57.1**	**(2.5) b**
LEAP								
Near-mastery	22.2	(1.6)	23.6	(1.4)	12.1	(1.2)	17.0	(1.5)
Mastery	13.2	(1.7)	30.2	(2.5)	6.5	(0.9)	29.2	(2.3)
Advanced	35.4	(2.6)	**53.8**	**(2.8) a**	**18.6**	**(1.5) b**	46.2	(2.9)
SPRINT RUN								
Near-mastery	26.6	(1.9)	25.8	(1.7)	27.0	(1.7)	25.3	(1.8)
Mastery	43.7	(3.0)	29.2	(2.8)	35.0	(2.5)	27.8	(2.6)
Advanced	70.4	(2.7)	**55.0**	**(3.1) a**	**62.0**	**(1.7) b**	53.1	(3.1)

a *Indicates statistically significant difference at P < 0.05. Comparisons are between sex within year*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference

Figure 9.9 Prevalence of mastery, near-mastery and advanced skills for each FMS among adolescents in secondary school by sex and year group in 2015 (%)




100
80
60
40
20
0
Prevalence of mastery and near mastery (%)
Boys
Girls
Year 8
Boys
Girls
Year 10
Boys
Girls
All years 2015
Sprint run:
Near mastery
Mastery

SOCIO-DEMOGRAPHIC DIFFERENCES

CATCH

The current findings indicate that approximately nine in 10 boys (87%) and three in four girls (74%) demonstrated advanced skills in the catch. The difference was significant between boys and girls. Table 9.14 and Figure 9.10 show the prevalence of advanced skills in the catch among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of advanced skills in the catch between adolescents from urban and rural areas.

Change between 2010-2015: Overall, there were no significant changes in the prevalence of advanced skills in the catch among adolescents from urban and rural areas between 2010 and 2015.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of advanced skills in the catch between adolescents from different SES backgrounds.

Change between 2010-2015: Overall, there were no significant changes in the prevalence of advanced skills in the catch among adolescents from different SES backgrounds between 2010 and 2015.

Cultural background

2015: Overall, the prevalence of advanced skills in the catch was significantly lower among adolescents from European cultural backgrounds (62%), compared with adolescents from English-speaking backgrounds (81%); and among girls from European cultural backgrounds (44%), compared with girls from English-speaking backgrounds (74%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the catch significantly decreased among adolescents from European cultural backgrounds, from 91% in 2010 to 62% in 2015; and among girls from European cultural backgrounds, from 84% in 2010 to 44% in 2015.

Weight status

2015: Overall, there were no significant differences in the prevalence of advanced skills in the catch between adolescents from different BMI categories.

Change between 2010-2015: Overall, there were no significant changes in the prevalence of advanced skills in the catch among adolescents from different BMI categories between 2010 and 2015.

Table 9.14 Prevalence of advanced skills for the catch among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015 and 2010 for comparison (%, SE)

CATCH	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	79.1	(1.8)	82.3	(2.3)	80.7	(1.5)	84.1	(1.2)
Rural	76.7	(3.8)	84.7	(2.3)	80.6	(2.8)	84.5	(2.9)
SES								
Low	76.2	(2.6)	82.3	(2.5)	79.3	(2.1)	84.9	(2.3)
Middle	81.5	(2.5)	83.5	(2.3)	82.5	(2.0)	85.3	(1.4)
High (ref)	77.9	(3.1)	83.2	(3.7)	80.5	(2.5)	82.3	(1.7)
Cultural background								
English-speaking (ref)	78.6	(1.9)	83.8	(1.6)	81.1	(1.4)	84.2	(1.2)
European	**51.1**	**(11.1) a**	72.5	(12.1)	**62.3**	**(6.9) a**	**91.1**	**(3.5) a**
Middle Eastern	87.5	(4.5)	82.0	(8.7)	85.0	(5.2)	74.2	(5.7)
Asian	77.7	(4.7)	78.5	(7.2)	78.2	(4.7)	85.0	(3.3)
BMI category								
Thin	85.6	(3.3)	87.7	(4.0)	86.5	(2.3)	81.0	(3.5)
Healthy weight (ref)	79.2	(2.0)	83.0	(1.9)	81.1	(1.6)	85.0	(1.3)
Overweight	**72.8**	**(3.2) a**	82.8	(3.3)	77.6	(2.1)	82.8	(2.2)
Obese	83.2	(4.3)	81.3	(7.1)	82.3	(4.0)	81.9	(3.9)
GIRLS								
Locality								
Urban (ref)	71.8	(2.6)	75.8	(3.7)	73.8	(2.6)	78.7	(1.9)
Rural	71.6	(7.3)	77.1	(3.9)	74.2	(4.6)	78.3	(5.2)
SES								
Low	66.7	(4.9)	77.0	(4.3)	71.7	(4.0)	79.1	(3.6)
Middle	78.8	(3.9)	76.4	(3.8)	77.5	(2.9)	78.6	(2.9)
High (ref)	71.0	(3.8)	75.0	(5.9)	73.0	(3.5)	78.2	(2.8)
Cultural background								
English-speaking (ref)	71.5	(2.9)	77.0	(2.8)	74.2	(2.1)	79.1	(2.0)
European	**35.2**	**(11.0) a**	60.5	(24.5)	**44.3**	**(12.7) a**	**83.5**	**(7.0) b**
Middle Eastern	84.3	(8.6)	88.9	(11.0)	86.1	(7.1)	64.3	(10.6)
Asian	77.1	(7.0)	70.1	(11.2)	72.9	(8.1)	75.8	(6.2)
BMI category								
Thin	**84.4**	**(4.6) a**	79.2	(7.7)	82.2	(3.9)	79.0	(5.2)
Healthy weight (ref)	71.3	(3.4)	76.8	(3.3)	74.1	(2.5)	79.3	(2.1)
Overweight	65.8	(5.3)	74.0	(4.2)	69.9	(3.2)	75.8	(4.2)
Obese	82.3	(5.6)	72.2	(13.2)	77.6	(6.7)	76.7	(6.0)

CATCH	2015						2010	
	Year 8		Year 10		All years		All years	
BOYS								
Locality								
Urban (ref)	86.3	(2.5)	89.3	(1.8)	87.8	(1.6)	89.1	(1.6)
Rural	81.1	(4.6)	90.6	(2.5)	85.9	(2.5)	90.0	(2.4)
SES								
Low	86.0	(2.5)	**86.9**	**(2.3)** a	86.5	(1.7)	90.3	(2.1)
Middle	83.8	(4.2)	90.4	(2.6)	87.0	(2.4)	91.1	(1.3)
High (ref)	84.7	(3.9)	92.6	(1.6)	88.4	(2.3)	86.5	(2.4)
Cultural background								
English-speaking (ref)	85.1	(2.4)	90.2	(1.6)	87.5	(1.5)	89.0	(1.4)
European	100.0	(0.0)	80.1	(13.2)	85.5	(10.0)	95.9	(2.7)
Middle Eastern	90.6	(3.5)	77.5	(13.1)	84.0	(7.4)	88.0	(2.4)
Asian	78.7	(5.4)	91.7	(3.5)	86.2	(3.0)	90.7	(2.5)
BMI category								
Thin	86.7	(5.5)	94.5	(3.5)	90.4	(3.3)	84.0	(5.2)
Healthy weight (ref)	86.9	(2.1)	89.3	(1.5)	88.1	(1.3)	90.4	(1.3)
Overweight	**79.0**	**(3.9)** a	91.3	(3.4)	84.9	(2.9)	88.3	(2.6)
Obese	84.1	(6.9)	89.6	(4.9)	86.9	(3.9)	84.9	(4.8)

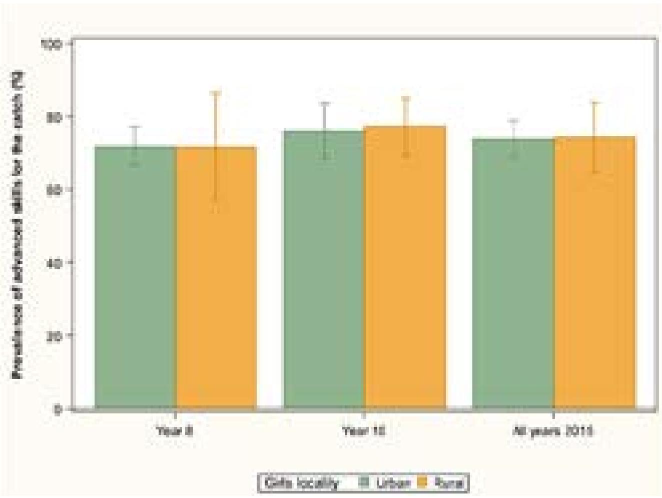
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

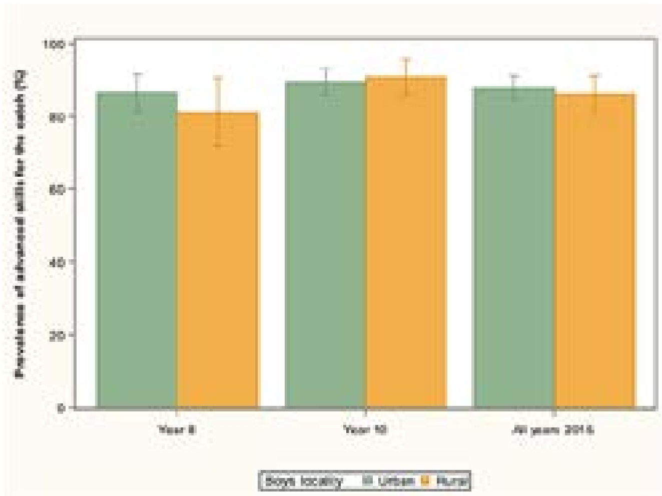
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

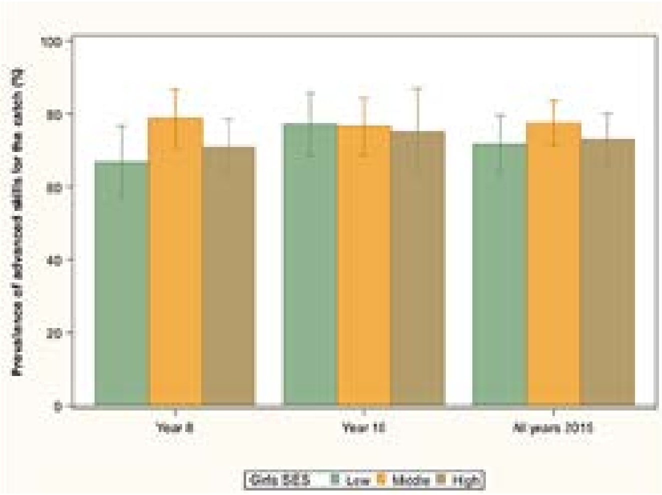
na *Indicates statistical significance could not be calculated due to low numbers.*

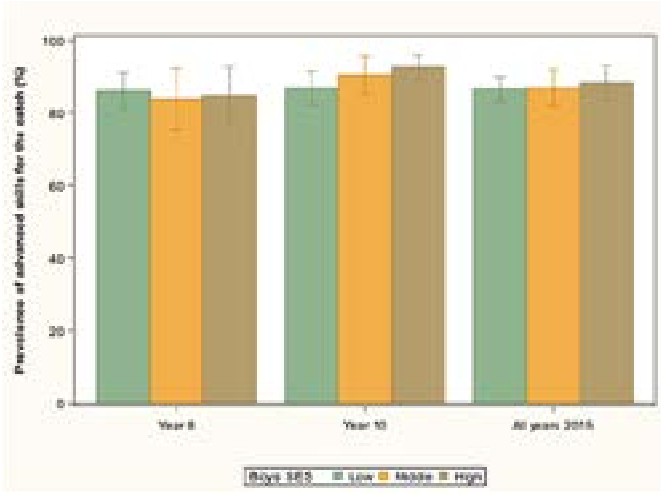
No letter means there was no statistical difference.

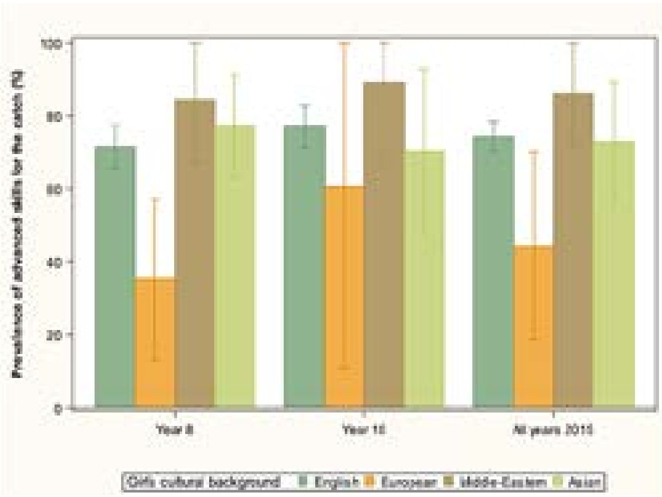
Figure 9.10 Prevalence of advanced skills for the catch among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

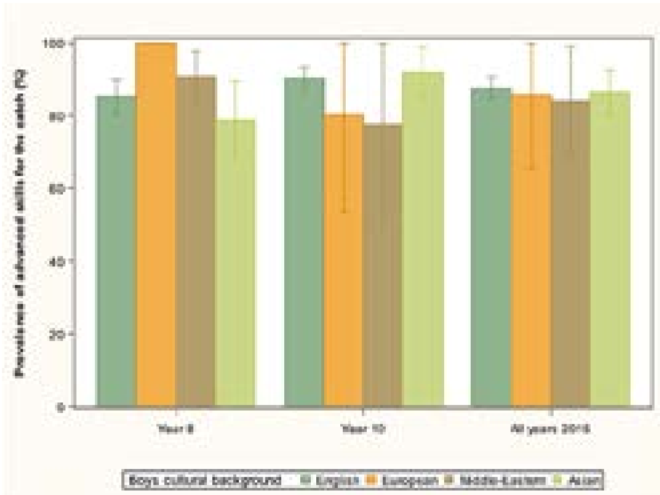


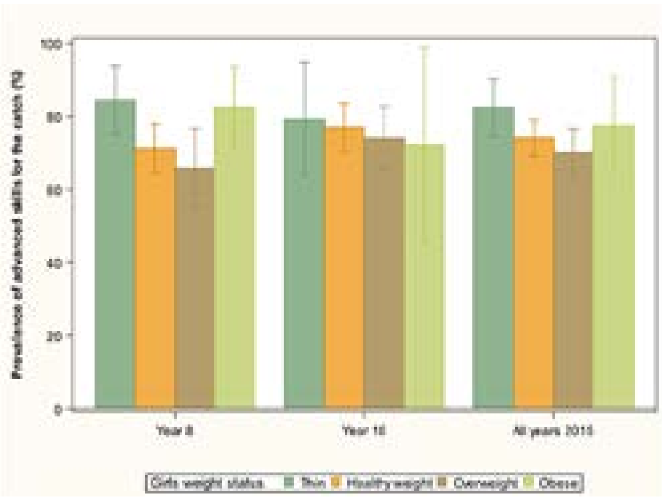


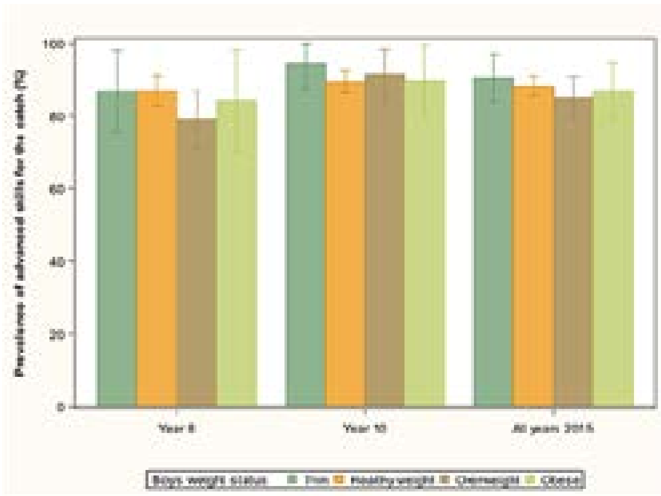

Prevalence of advanced skills for the catch (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Prevalence of advanced skills for the catch (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Prevalence of advanced skills for the catch (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skills for the catch (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skills for the catch (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of advanced skills for the catch (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

KICK

The current findings indicate that approximately three in four boys (74%) and one in three girls (33%) demonstrated advanced skills in the kick. The difference was significant between boys and girls. Table 9.15 and Figure 9.11 show the prevalence of advanced skills in the kick among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of advanced skills in the kick between adolescents from urban and rural areas.

Change between 2010-2015: Overall, the prevalence of advanced skills in the kick significantly increased among girls from rural areas, from 24% in 2010 to 36% in 2015.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of advanced skills in the kick between children from different SES backgrounds

Change between 2010-2015: Overall, there were no significant changes in the prevalence of advanced skills in the kick among adolescents from different SES backgrounds between 2010 and 2015.

Cultural background

2015: Overall, the prevalence of advanced skills in the kick was significantly lower among adolescents from Asian cultural backgrounds (35%), compared with adolescents from English-speaking backgrounds (56%). The prevalence was significantly lower among girls from Asian cultural backgrounds (20%), compared with girls from English-speaking backgrounds (35%); and among boys from Asian cultural backgrounds (57%), compared with boys from English-speaking backgrounds (75%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the kick significantly increased among adolescents from Middle Eastern cultural backgrounds, from 39% in 2010 to 59% in 2015.

Weight status

2015: Overall, the prevalence of advanced skills in the kick was significantly lower among adolescents in the overweight (48%) and obese (39%) BMI categories, compared with adolescents in the healthy weight BMI category (57%). The prevalence was significantly lower among girls in the obese BMI category (19%), compared with girls in the healthy weight BMI category (35%); and among boys in the overweight (64%) and obese BMI categories (60%), compared with boys in the healthy weight BMI category (79%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the kick significantly increased among adolescents in the thin BMI category (from 42% in 2010 to 54% in 2015), and among girls in the thin BMI category (from 22% in 2010 to 36% in 2015) and in the healthy weight BMI category (from 28% in 2010 to 35% in 2015).

Table 9.15 Prevalence of advanced skills for the kick among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015, and 2010 for comparison (%, SE)

KICK	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	48.8	(3.2)	56.7	(3.2)	52.7	(2.6)	51.5	(2.7)
Rural	50.9	(5.2)	61.9	(5.2)	56.4	(4.3)	49.7	(2.9)
SES								
Low	50.7	(3.3)	56.7	(4.6)	53.7	(3.3)	50.1	(3.3)
Middle	50.2	(4.4)	57.2	(3.3)	53.7	(3.2)	50.1	(3.1)
High (ref)	47.1	(4.7)	60.7	(4.4)	53.7	(3.6)	53.0	(4.0)
Cultural background								
English-speaking (ref)	50.7	(2.9)	60.8	(2.8)	55.6	(2.3)	52.2	(2.3)
European	42.2	(9.9)	45.5	(16.2)	43.9	(8.7)	61.7	(8.3)
Middle Eastern	53.4	(7.8)	64.8	(10.6)	58.6	(6.7)	**38.8**	**(5.0) a**
Asian	**33.0**	**(4.5) a**	**35.5**	**(6.9) a**	**34.5**	**(4.1) a**	42.9	(4.9)
BMI category								
Thin	50.0	(6.1)	58.9	(7.4)	53.9	(5.0)	**41.7**	**(4.2) b**
Healthy weight (ref)	52.5	(2.9)	61.5	(3.2)	57.1	(2.5)	52.1	(2.5)
Overweight	**43.3**	**(3.8) a**	**52.5**	**(4.3) a**	**47.8**	**(2.9) a**	52.3	(2.9)
Obese	**36.4**	**(5.8) a**	**42.0**	**(8.3) a**	**39.1**	**(5.1) a**	45.2	(4.8)
GIRLS								
Locality								
Urban (ref)	26.9	(2.7)	37.9	(3.9)	32.5	(2.5)	28.4	(2.6)
Rural	30.9	(5.2)	42.0	(7.6)	36.3	(4.9)	**24.1**	**(2.7) b**
SES								
Low	30.7	(3.3)	33.9	(4.8)	32.3	(3.0)	24.6	(3.0)
Middle	29.2	(4.9)	39.3	(5.4)	34.4	(4.1)	27.3	(3.0)
High (ref)	24.0	(3.8)	43.4	(5.2)	33.7	(3.7)	29.9	(3.9)
Cultural background								
English-speaking (ref)	29.1	(2.8)	41.9	(4.0)	35.4	(2.6)	28.8	(2.5)
European	**23.4**	**(8.7)**	22.2	(17.4)	**23.0**	**(9.8)**	36.2	(10.2)
Middle Eastern	20.7	(12.7)	47.9	(21.4)	31.5	(16.0)	17.9	(4.9)
Asian	**19.0**	**(3.3) a**	**19.9**	**(8.0) a**	**19.6**	**(4.2) a**	15.0	(3.5)
BMI category								
Thin	32.4	(7.2)	42.2	(8.1)	36.3	(5.1)	**22.3**	**(4.3) b**
Healthy weight (ref)	28.7	(2.6)	41.6	(4.4)	35.3	(2.8)	**27.9**	**(2.4) b**
Overweight	26.2	(4.0)	35.8	(6.0)	31.0	(3.6)	27.3	(3.3)
Obese	21.8	(7.8)	**15.3**	**(6.8) a**	**18.8**	**(5.4) a**	29.3	(8.9)

KICK	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	70.7 (3.6)	76.7 (3.0)	73.6 (2.2)	73.0 (2.9)
Rural	68.3 (6.1)	77.9 (3.7)	73.2 (4.3)	72.0 (3.6)
SES				
Low	71.6 (5.7)	76.6 (3.7)	74.3 (3.6)	73.7 (3.3)
Middle	68.3 (4.2)	74.4 (3.4)	71.2 (2.9)	69.4 (3.8)
High (ref)	70.1 (4.6)	80.4 (4.8)	74.9 (3.1)	75.7 (3.5)
Cultural background				
English-speaking (ref)	70.5 (3.0)	78.8 (2.5)	74.5 (2.0)	74.1 (2.4)
European	100.0 (0.0)	60.3 (26.5)	71.0 (20.0)	78.1 (9.5)
Middle Eastern	**85.5 (5.8) a**	75.7 (10.7)	80.6 (4.6)	68.0 (9.1)
Asian	**52.3 (8.8) a**	**60.0 (6.0) a**	**56.7 (5.0) a**	**60.4 (6.6)**
BMI category				
Thin	67.8 (8.5)	71.9 (9.0)	69.7 (6.3)	69.3 (6.0)
Healthy weight (ref)	75.9 (2.6)	81.5 (2.6)	78.7 (1.7)	74.9 (2.7)
Overweight	**58.4 (5.4) a**	**69.2 (5.5) a**	**63.5 (4.2) a**	71.5 (3.4)
Obese	**52.2 (10.8) a**	66.7 (10.4)	**59.5 (7.9) a**	54.6 (5.8)

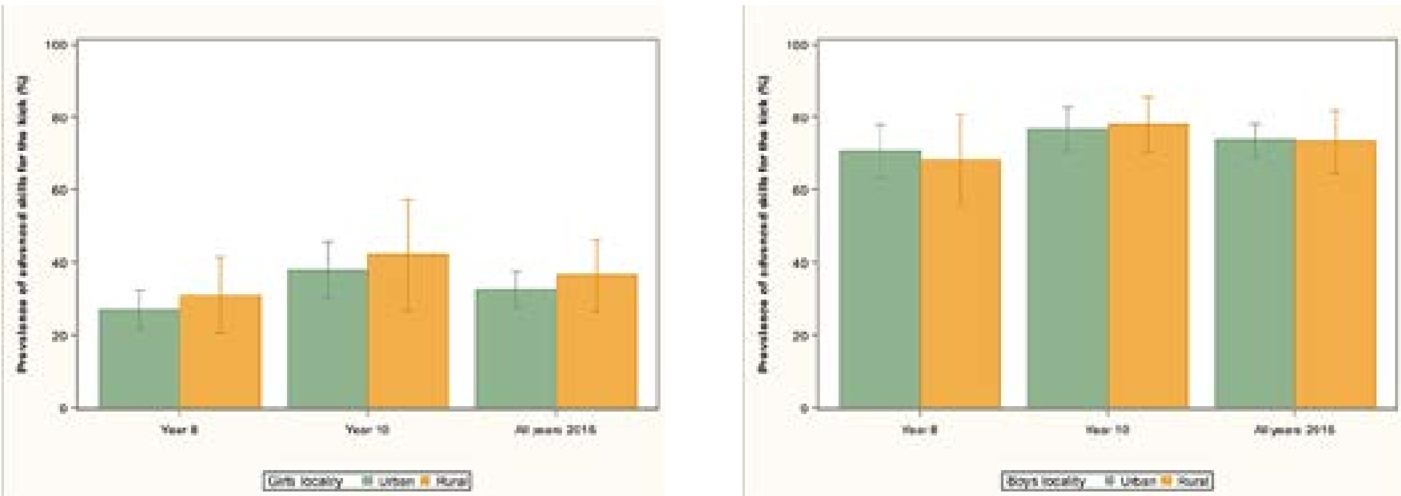
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

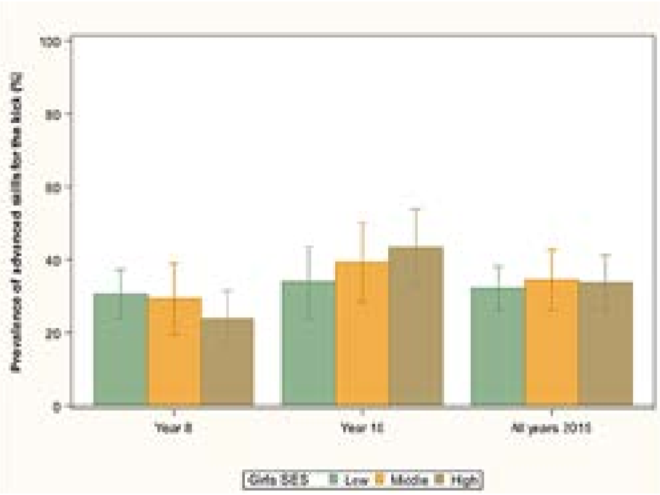
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

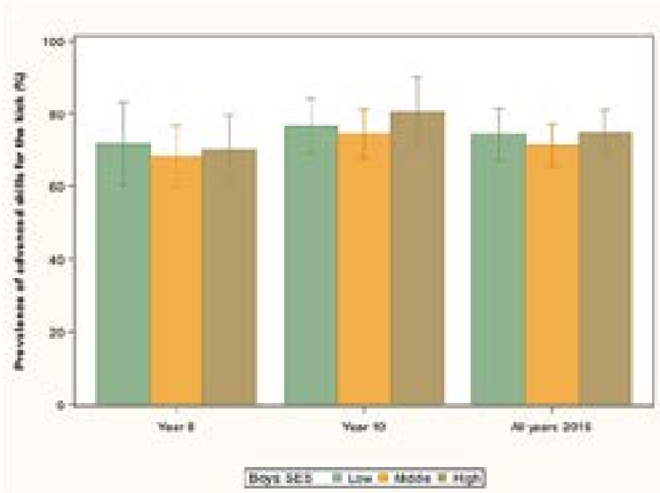
na *Indicates statistical significance could not be calculated due to low numbers.*

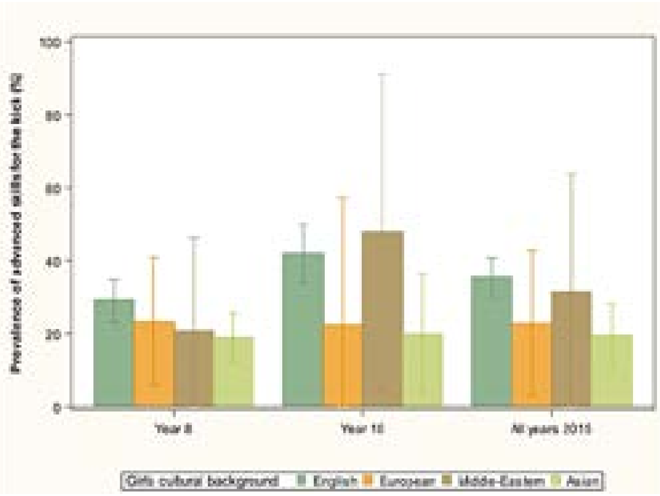
No letter means there was no statistical difference.

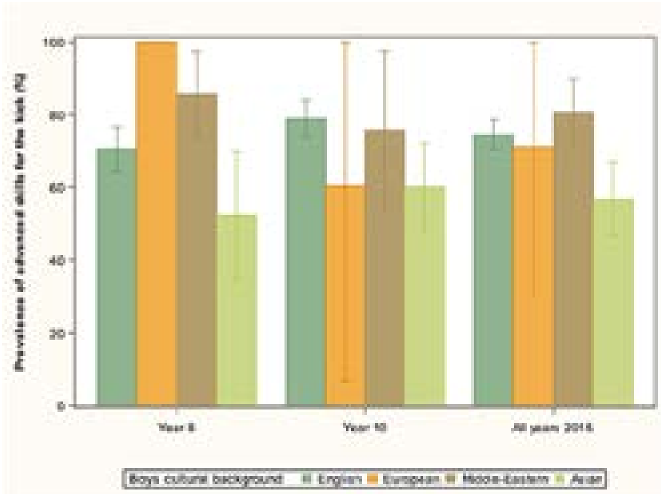
Figure 9.11 Prevalence of advanced skills for the kick among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

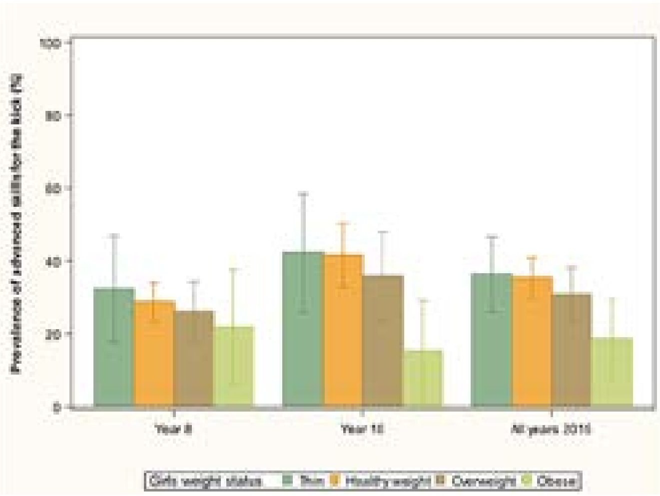


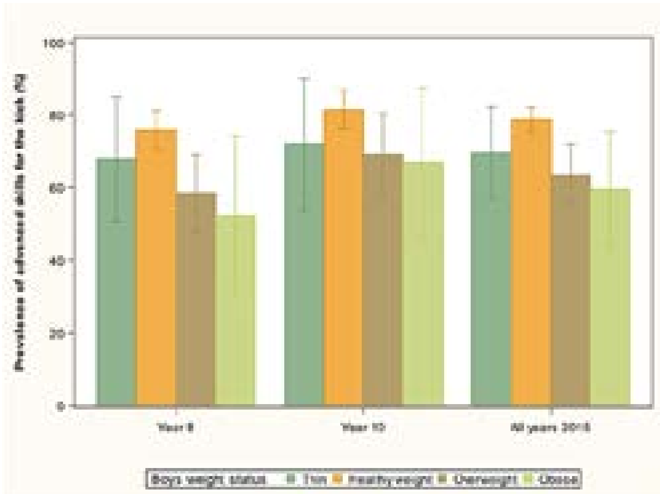

Prevalence of advanced skills for the kick (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Prevalence of advanced skills for the kick (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Prevalence of advanced skills for the kick (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skills for the kick (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skills for the kick (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of advanced skills for the kick (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

OVER-ARM THROW

The current findings indicate that approximately two in three boys (67%) and one in three girls (30%) demonstrated advanced skills in the over-arm throw. The difference was significant between boys and girls. Table 9.16 and Figure 9.12 show the prevalence of advanced skills in the over-arm throw among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, the prevalence of advanced skills in the over-arm throw was significantly higher among adolescents from rural areas (56%), compared with adolescents from urban areas (46%); and among girls from rural areas (40%), compared with girls from urban areas (27%).

Change between 2010-2015: Overall, there were no significant changes in the prevalence of advanced skills in the over-arm throw among adolescents from rural and urban areas between 2010 and 2015.

Socio-economic status

2015: Overall, the prevalence of advanced skills in the over-arm throw was significantly higher among adolescents from low SES backgrounds (52%), compared with adolescents from high SES backgrounds (43%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the over-arm throw significantly increased among girls from middle SES backgrounds, from 24% in 2010 to 35% in 2015.

Cultural background

2015: Overall, the prevalence of advanced skills in the over-arm throw was significantly lower among adolescents from Asian cultural backgrounds (40%), compared with adolescents from English-speaking backgrounds (50%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the over-arm throw significantly increased among adolescents from Middle Eastern cultural backgrounds, from 38% in 2010 to 52% in 2015; and significantly decreased among boys from English-speaking backgrounds, from 73% in 2010 to 67% in 2015.

Weight status

2015: Overall, the prevalence of advanced skills in the over-arm throw was significantly lower among boys in the overweight (62%) and obese (52%) BMI categories, compared with boys in the healthy weight BMI category (70%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the over-arm throw significantly decreased among boys in the overweight BMI category, from 71% in 2010 to 62% in 2015.

Table 9.16 Prevalence of advanced skills for the over-arm throw among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015, and 2010 for comparison (%, SE)

OVER-ARM THROW	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	43.6	(2.9)	48.5	(2.6)	46.0	(2.4)	48.7	(2.3)
Rural	**55.8**	**(5.3) a**	56.8	(4.1)	**56.3**	**(4.3) a**	53.9	(3.1)
SES								
Low	**50.8**	**(3.9) a**	53.3	(4.3)	**52.1**	**(3.6) a**	53.5	(3.5)
Middle	**50.8**	**(4.7) a**	51.5	(3.4)	51.2	(3.7)	48.3	(2.3)
High (ref)	39.1	(3.7)	47.1	(3.4)	43.0	(3.1)	48.6	(3.6)
Cultural background								
English-speaking (ref)	47.8	(2.9)	51.2	(2.5)	49.5	(2.5)	50.4	(2.0)
European	**24.4**	**(10.7) a**	52.2	(12.2)	38.9	(10.5)	58.6	(8.7)
Middle Eastern	54.1	(7.1)	50.0	(9.6)	52.2	(5.1)	**37.6**	**(5.7) b**
Asian	**33.9**	**(5.7) a**	44.1	(6.5)	**40.0**	**(4.6) a**	46.9	(4.3)
BMI category								
Thin	47.6	(5.8)	54.4	(5.5)	50.6	(4.0)	42.6	(4.4)
Healthy weight (ref)	48.9	(3.4)	50.5	(2.8)	49.7	(2.8)	51.2	(2.3)
Overweight	44.1	(3.6)	49.3	(3.5)	46.6	(2.6)	50.1	(2.9)
Obese	**35.3**	**(5.9) a**	53.7	(8.9)	44.3	(5.4)	41.8	(5.2)
GIRLS								
Locality								
Urban (ref)	24.2	(3.0)	30.2	(3.6)	27.2	(2.7)	24.9	(2.0)
Rural	**41.4**	**(6.1) a**	38.5	(6.7)	**40.0**	**(5.7) a**	29.2	(3.0)
SES								
Low	**33.3**	**(4.1) a**	33.7	(4.8)	33.5	(3.6)	28.0	(3.2)
Middle	32.6	(5.6)	36.9	(5.2)	34.8	(4.8)	**23.6**	**(2.6) b**
High (ref)	20.2	(4.5)	26.5	(5.4)	23.4	(4.3)	26.5	(2.9)
Cultural background								
English-speaking (ref)	30.0	(3.3)	32.0	(3.9)	31.0	(3.1)	26.3	(1.9)
European	18.6	(11.6)	16.6	(15.6)	17.8	(9.9)	35.8	(10.7)
Middle Eastern	23.5	(9.5)	34.0	(13.4)	27.7	(9.4)	17.0	(3.2)
Asian	17.7	(6.6)	29.6	(5.4)	24.9	(3.9)	24.2	(6.7)
BMI category								
Thin	32.1	(6.6)	33.8	(8.0)	32.8	(4.7)	26.2	(4.9)
Healthy weight (ref)	28.7	(3.5)	30.9	(3.5)	29.8	(3.0)	26.9	(2.0)
Overweight	28.3	(4.5)	32.1	(5.9)	30.2	(3.7)	22.6	(3.4)
Obese	25.6	(6.2)	48.5	(13.3)	36.3	(8.7)	18.2	(5.9)

OVER-ARM THROW	2015						2010	
	Year 8		Year 10		All years		All years	
BOYS								
Locality								
Urban (ref)	63.0	(4.1)	67.9	(3.2)	65.4	(3.2)	71.0	(2.2)
Rural	68.3	(5.2)	71.5	(5.7)	69.9	(4.5)	75.9	(4.0)
SES								
Low	69.0	(5.1)	70.4	(4.5)	69.7	(4.1)	77.1	(3.7)
Middle	66.6	(4.5)	65.6	(5.5)	66.1	(4.3)	69.7	(3.0)
High (ref)	58.0	(4.5)	70.6	(4.1)	63.9	(3.7)	70.6	(2.5)
Cultural background								
English-speaking (ref)	64.2	(3.4)	69.5	(3.0)	66.7	(2.8)	**73.2**	**(2.0) b**
European	42.3	(25.3)	74.7	(12.2)	66.0	(10.8)	73.2	(9.3)
Middle Eastern	84.1	(9.8)	60.2	(15.1)	72.1	(7.9)	66.4	(6.1)
Asian	56.5	(7.6)	67.1	(9.8)	62.6	(6.2)	**61.1**	**(5.1)**
BMI category								
Thin	63.3	(8.5)	70.6	(6.6)	66.7	(6.2)	67.1	(6.6)
Healthy weight (ref)	68.7	(3.9)	70.3	(3.1)	69.5	(3.1)	74.2	(2.1)
Overweight	**58.2**	**(4.4) a**	66.3	(5.2)	**62.0**	**(3.7) a**	**71.4**	**(2.9) b**
Obese	**45.9**	**(9.4) a**	58.6	(9.9)	**52.3**	**(6.2) a**	55.9	(7.3)

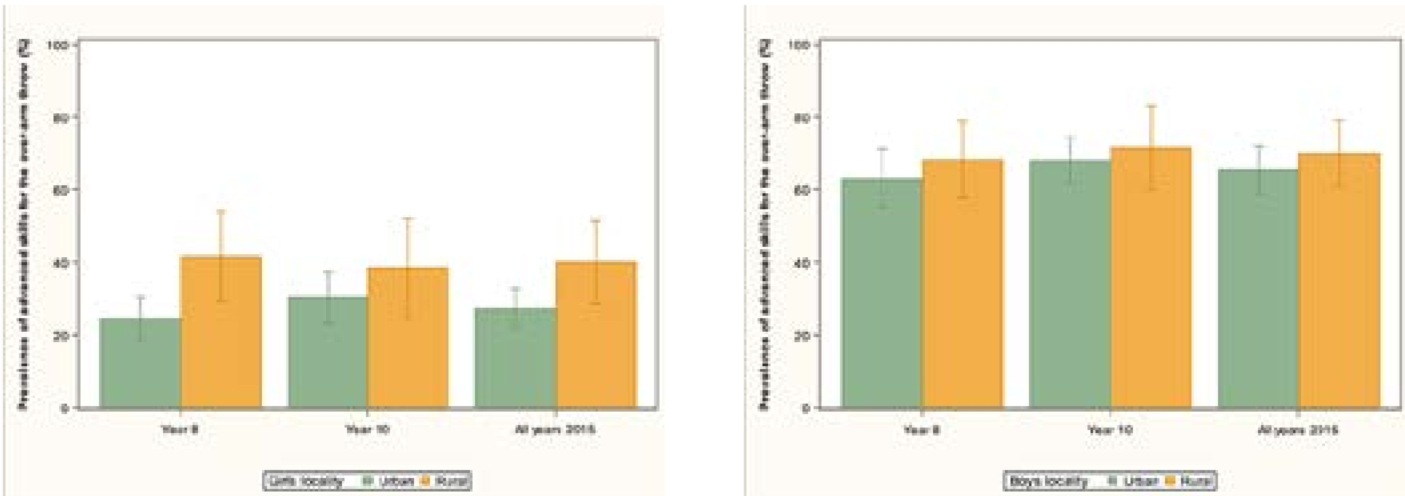
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

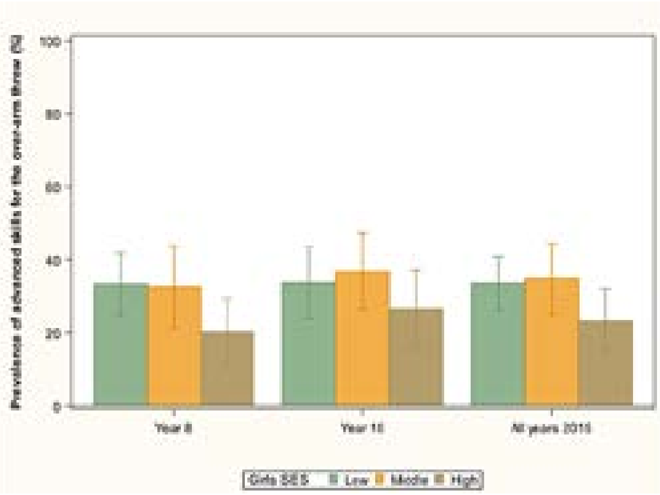
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic*

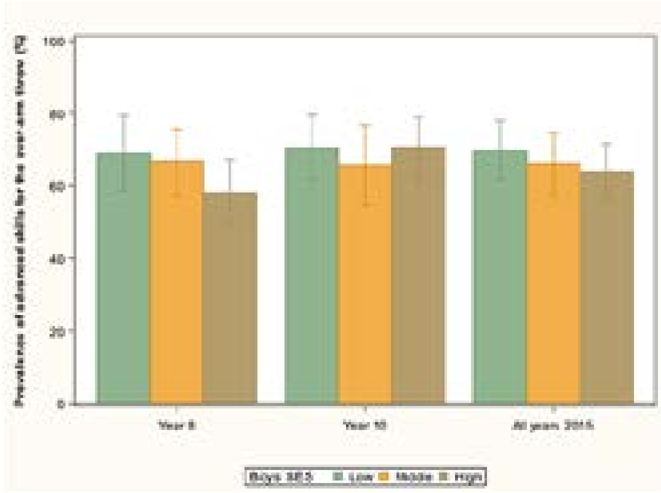
na *Indicates statistical significance could not be calculated due to low numbers.*

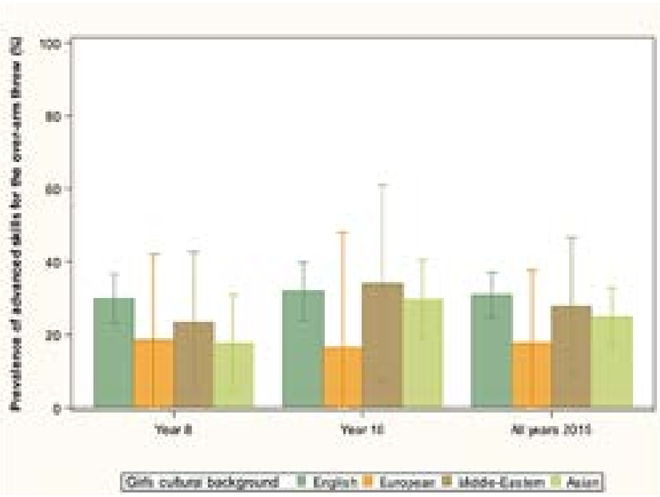
No letter means there was no statistical difference.

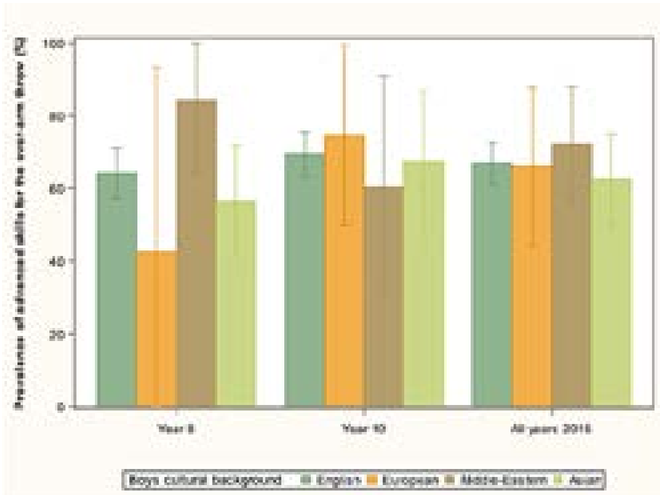
Figure 9.12 Prevalence of advanced skills for the overarm throw among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

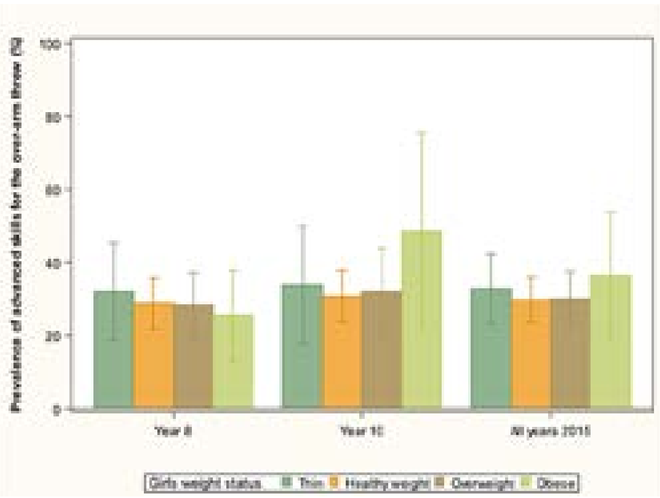


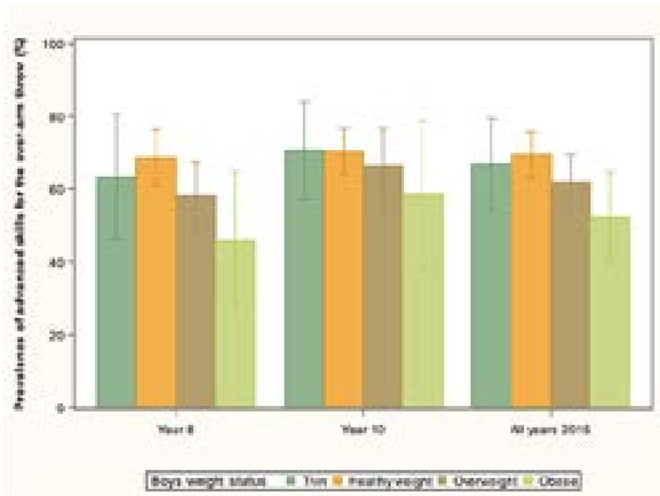

Prevalence of advanced skills for the over-arm throw (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Prevalence of advanced skills for the over-arm throw (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Prevalence of advanced skills for the over-arm throw (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skills for the over-arm throw (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skills for the over-arm throw (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of advanced skills for the over-arm throw (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

SIDE GALLOP

The current findings indicate that approximately nine in 10 (93%) adolescents demonstrated advanced skills in the side gallop. Table 9.17 and Figure 9.13 show the prevalence of advanced skills in the side gallop among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015 and in 2010 for comparison.

Locality

2015: Overall, the prevalence of advanced skills in the side gallop was significantly higher among adolescents from rural areas (95%), compared with adolescents from urban areas (92%); and among boys from rural areas (96%), compared with boys from urban areas (92%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the side gallop significantly increased among adolescents from rural areas, from 91% in 2010 to 95% in 2015; and among boys from urban areas, from 87% in 2010 to 92% in 2015; and among boys from rural areas, from 90% in 2010 to 96% in 2015.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of advanced skills in the side gallop among adolescents from different SES backgrounds.

Change between 2010-2015: Overall, the prevalence of advanced skills in the side gallop significantly increased among adolescents from high SES backgrounds, from 89% in 2010 to 94% in 2015; and among boys from middle SES backgrounds (from 87% in 2010 to 93% in 2015) and among boys from high SES backgrounds (from 85% in 2010 to 93% in 2015).

Cultural background

2015: Overall, there were no significant differences in the prevalence of advanced skills in the side gallop among adolescents from different cultural backgrounds.

Change between 2010-2015: Overall, the prevalence of advanced skills in the side gallop significantly increased among adolescents from English-speaking backgrounds, from 90% in 2010 to 93% in 2015; and significantly decreased among adolescents from Middle Eastern cultural backgrounds, from 97% in 2010 to 90% in 2015. The prevalence significantly decreased among girls from Middle Eastern cultural backgrounds, from 98% in 2010 to 90% in 2015; and significantly increased among boys from English-speaking backgrounds (from 87% in 2010 to 93% in 2015) and boys from Asian cultural backgrounds (from 90% in 2010 to 97% in 2015).

Weight status

2015: Overall, the prevalence of advanced skills in the side gallop was significantly lower among adolescents in the overweight (90%) and obese (90%) BMI categories, compared with adolescents in the healthy weight BMI category (95%). The prevalence was significantly lower among girls in the overweight BMI category (91%), compared with girls in the healthy weight BMI category (94%); and among boys in the overweight BMI category (89%), compared with boys in the healthy weight BMI category (95%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the side gallop significantly increased among adolescents in the healthy weight BMI category (from 91% in 2010 to 95% in 2015), among boys in the healthy weight BMI category (from 89% in 2010 to 95% in 2015) and in the obese BMI category (from 78% in 2010 to 93% in 2015).

Table 9.17 Prevalence of advanced skills for the side gallop among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015, and 2010 for comparison (%, SE)

SIDE GALLOP	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	90.7	(1.7)	93.7	(1.3)	92.2	(1.2)	90.1	(1.1)
Rural	92.1	(1.2)	**98.3**	**(0.9) a**	**95.2**	**(0.8) a**	**91.3**	**(1.3) a**
SES								
Low	91.2	(1.4)	94.0	(2.1)	92.6	(1.5)	92.0	(1.1)
Middle	89.8	(2.5)	95.9	(1.1)	92.8	(1.4)	90.1	(1.0)
High (ref)	92.2	(1.8)	95.2	(1.2)	93.6	(1.1)	**89.3**	**(1.7) b**
Cultural background								
English-speaking (ref)	91.1	(1.3)	95.3	(0.9)	93.1	(0.8)	**90.4**	**(0.9) b**
European	89.1	(6.6)	100.0	(0.0)	94.8	(3.4)	88.3	(4.6)
Middle Eastern	88.5	(4.7)	91.5	(4.9)	89.9	(4.1)	**96.5**	**(2.1) b**
Asian	93.2	(4.3)	92.4	(3.5)	92.7	(3.7)	88.8	(2.3)
BMI category								
Thin	94.2	(2.8)	94.3	(2.5)	94.3	(2.0)	90.9	(2.2)
Healthy weight (ref)	92.9	(1.3)	96.0	(0.9)	94.5	(0.9)	**91.3**	**(0.8) b**
Overweight	**86.8**	**(2.7) a**	92.5	(2.5)	**89.6**	**(1.9) a**	89.1	(2.1)
Obese	**84.0**	**(5.0) a**	96.5	(2.0)	**89.9**	**(2.9) a**	82.6	(3.5)
GIRLS								
Locality								
Urban (ref)	90.2	(2.4)	94.4	(2.2)	92.3	(2.0)	93.7	(0.9)
Rural	90.7	(1.7)	**98.5**	**(1.0) a**	94.4	(1.2)	93.2	(2.0)
SES								
Low	91.2	(1.9)	93.1	(3.9)	92.1	(2.5)	92.6	(1.8)
Middle	86.9	(4.1)	97.6	(1.4)	92.3	(2.3)	93.6	(1.0)
High (ref)	92.3	(2.4)	95.6	(1.6)	94.0	(1.6)	94.2	(1.3)
Cultural background								
English-speaking (ref)	90.5	(1.7)	96.6	(1.2)	93.5	(1.2)	94.0	(0.8)
European	85.6	(8.3)	100.0	(0.0)	90.8	(5.6)	90.7	(4.5)
Middle Eastern	91.5	(6.6)	**86.3**	**(10.1) a**	89.5	(7.2)	**98.4**	**(1.6) b**
Asian	91.5	(6.0)	**89.1**	**(5.1) a**	90.1	(5.2)	87.7	(3.7)
BMI category								
Thin	92.9	(3.6)	94.4	(3.6)	93.5	(2.9)	93.1	(2.2)
Healthy weight (ref)	91.5	(1.9)	96.4	(1.5)	94.0	(1.5)	94.1	(0.8)
Overweight	88.8	(3.3)	92.2	(3.9)	**90.5**	**(2.5) b**	92.0	(2.3)
Obese	79.7	(8.4)	96.6	(3.3)	87.3	(5.3)	89.6	(4.1)

SIDE GALLOP	2015						2010	
	Year 8		Year 10		All years		All years	
BOYS								
Locality								
Urban (ref)	91.3	(1.8)	93.0	(1.4)	92.1	(1.0)	**86.8**	**(1.7) b**
Rural	93.3	(1.9)	**98.1**	**(1.3) a**	**95.8**	**(1.0) a**	**89.7**	**(1.8) b**
SES								
Low	91.2	(1.8)	94.7	(1.8)	93.1	(1.3)	91.3	(1.5)
Middle	92.2	(2.0)	94.3	(1.6)	93.2	(1.2)	**87.1**	**(1.6) b**
High (ref)	92.2	(2.4)	94.6	(1.8)	93.3	(1.4)	**84.5**	**(2.7) b**
Cultural background								
English-speaking (ref)	91.7	(1.5)	94.0	(1.2)	92.8	(0.9)	**87.0**	**(1.5) b**
European	100.0	(0.0)	100.0	(0.0)	100.0	(0.0)	86.7	(7.3)
Middle Eastern	85.5	(5.8)	94.8	(3.2)	90.2	(3.2)	93.9	(3.8)
Asian	95.5	(3.6)	97.6	(2.3)	96.7	(1.9)	**89.6**	**(2.1) b**
BMI category								
Thin	95.6	(3.3)	94.2	(3.6)	94.9	(2.5)	87.5	(3.9)
Healthy weight (ref)	94.3	(1.7)	95.6	(0.9)	95.0	(1.0)	**88.5**	**(1.2) b**
Overweight	**85.0**	**(3.5) a**	92.8	(3.4)	**88.7**	**(2.5) a**	86.9	(3.1)
Obese	88.6	(4.1)	96.4	(2.4)	92.5	(2.2)	**78.4**	**(4.9) b**

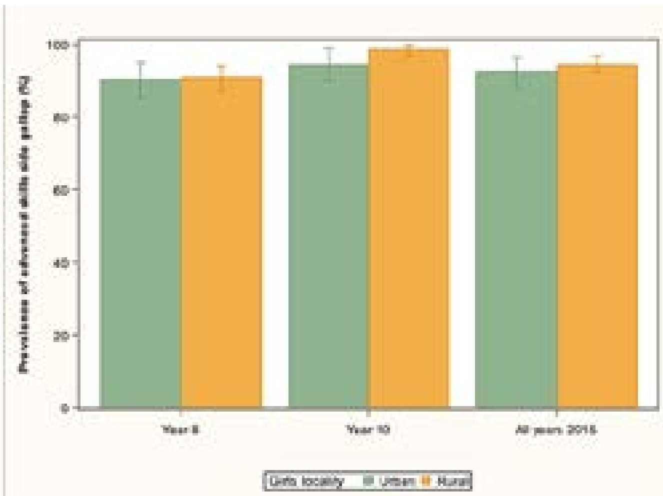
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

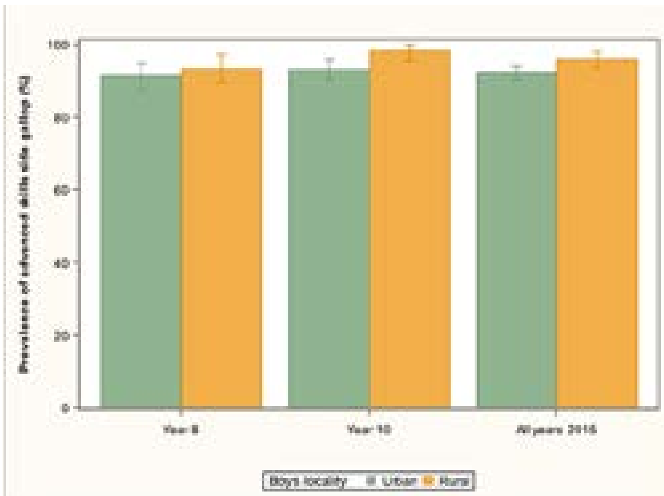
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

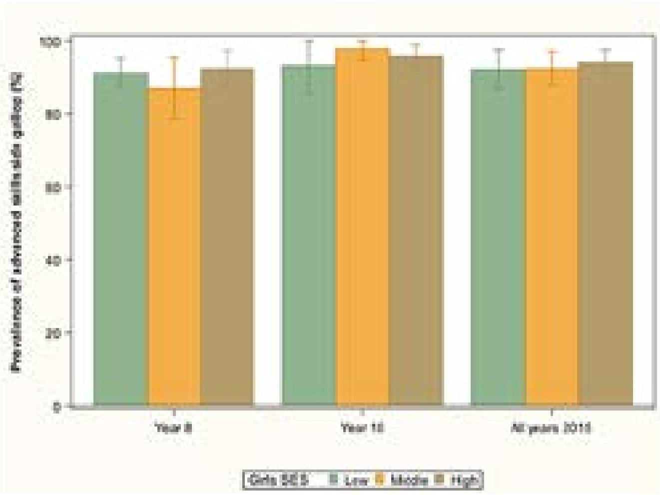
na *Indicates statistical significance could not be calculated due to low numbers.*

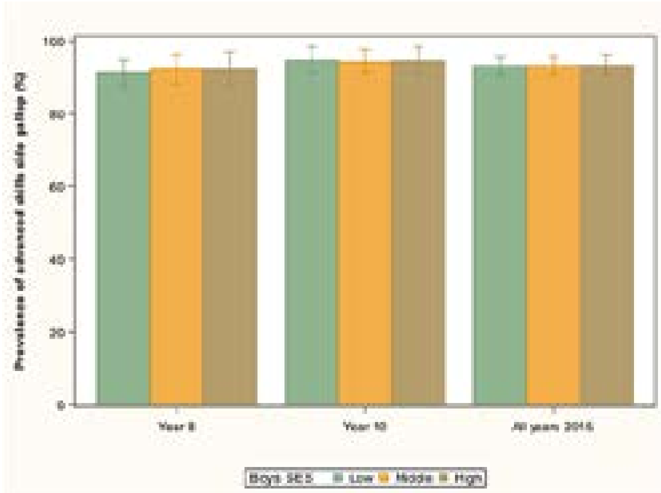
No letter means there was no statistical difference.

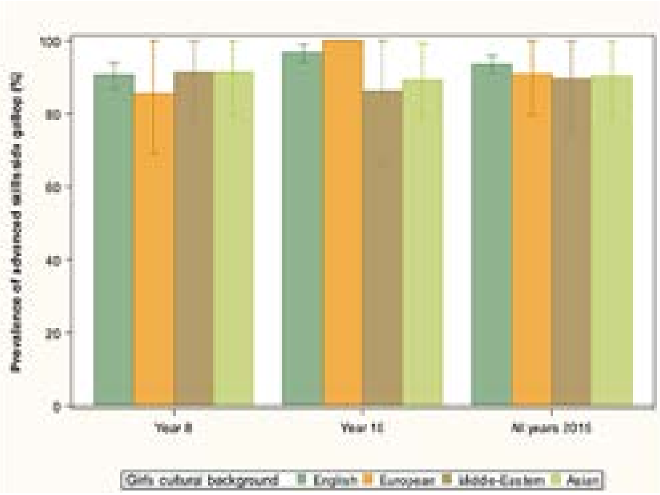
Figure 9.13 Prevalence of advanced skills for the side gallop among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

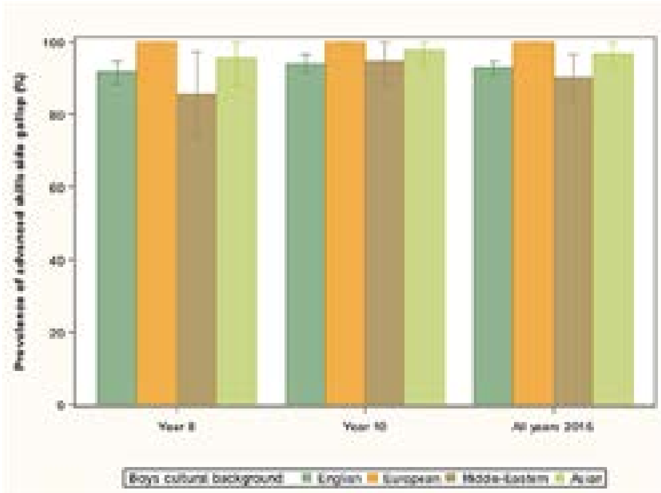


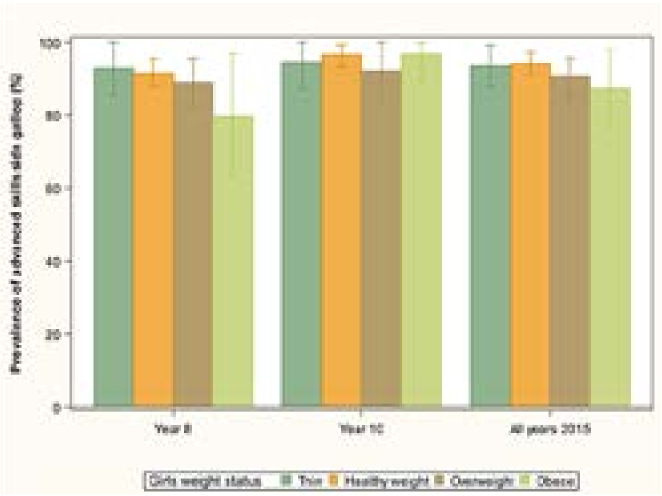


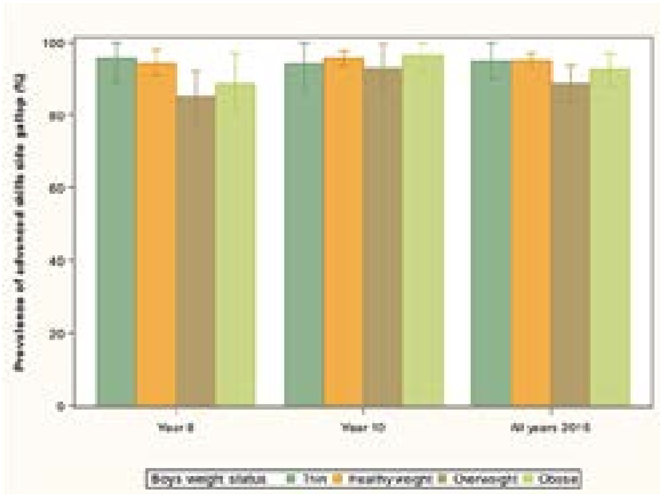

Prevalence of advanced skills side gallop (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls SES Low Middle High


Prevalence of advanced skills side gallop (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys SES Low Middle High


Prevalence of advanced skills side gallop (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls cultural background English European Middle-Eastern Asian


Prevalence of advanced skills side gallop (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys cultural background English European Middle-Eastern Asian


Prevalence of advanced skills side gallop (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Prevalence of advanced skills side gallop (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

LEAP

The current findings indicate that approximately three in four boys (74%) and two in three girls (67%) demonstrated advanced skills in the vertical jump. Table 9.18 and Figure 9.14 show the prevalence of advanced skills in the vertical jump among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, there were no significant differences in the prevalence of advanced skills in the vertical jump among adolescents from urban and from rural areas.

Change between 2010-2015: Overall, the prevalence of advanced skills in the vertical jump significantly increased among adolescents from urban areas, from 62% in 2010 to 70% in 2015; and from rural areas, from 55% in 2010 to 72% in 2015. The prevalence significantly increased among girls from rural areas, from 48% in 2010 to 71% in 2015; and among boys from urban areas (from 65% in 2010 to 75% in 2015), and from rural areas (from 61% in 2010 to 72% in 2015).

Socio-economic status

2015: Overall, the prevalence of advanced skills in the vertical jump was significantly lower among girls from low SES (64%) and middle SES (64%) backgrounds, compared with girls from high SES backgrounds (73%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the vertical jump significantly increased among adolescents from low SES backgrounds, from 57% in 2010 to 69% in 2015; from middle SES backgrounds, from 58% in 2010 to 69% in 2015; and from high SES backgrounds, from 67% in 2010 to 75% in 2015. The prevalence significantly increased among girls from low SES backgrounds, from 45% in 2010 to 64% in 2015; and among boys from middle SES backgrounds, from 57% in 2010 to 73% in 2015.

Cultural background

2015: Overall, the prevalence of advanced skills in the vertical jump was significantly lower among adolescents from Middle Eastern (58%) and Asian (53%) cultural backgrounds, compared with adolescents from English-speaking backgrounds (73%). The prevalence was significant lower among girls from Middle Eastern (52%) and Asian (39%) cultural backgrounds, compared with girls from English-speaking backgrounds (71%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the vertical jump significantly increased among adolescents from English-speaking backgrounds, from 61% in 2010 to 73% in 2015; and significantly decreased among adolescents from Asian cultural backgrounds, from 66% in 2010 to 53% in 2015. The prevalence significantly increased among girls from English-speaking backgrounds (from 58% in 2010 to 71% in 2015), from European cultural backgrounds (from 42% in 2010 to 72% in 2015), and significantly decreased among girls from Asian cultural backgrounds (from 53% in 2010 to 39% in 2015).

Weight status

2015: Overall, the prevalence of advanced skills in the vertical jump was significantly lower among adolescents in the overweight (65%) and obese (55%) BMI categories, compared with adolescents in the healthy weight BMI category (74%). The prevalence was significantly lower among girls in the obese BMI category (51%), compared with girls in the healthy weight BMI category (70%); and among boys in the overweight (66%) and obese (60%) BMI categories, compared with boys in the healthy weight BMI category (78%).

Change between 2010-2015: verall, the prevalence of advanced skills in the vertical jump significantly increased among adolescents in the healthy weight BMI category from 64% in 2010 to 74% in 2015, in the overweight BMI category from 55% in 2010 to 65% in 2015 and in the obese BMI category from 36% in 2010 to 55% in 2015. The prevalence significantly increased among girls in the healthy weight BMI category, from 60% in 2010 to 70% in 2015; in the overweight BMI category, from 50% in 2010 to 63% in 2015; and in the obese BMI category, from 29% in 2010 to 51% in 2015. The prevalence significantly increased among boys in the healthy weight BMI category, from 67% in 2010 to 78% in 2015; and in the obese BMI category, from 40% in 2010 to 60% in 2015.

Table 9.18 Prevalence of advanced skills for the vertical jump among adolescents in secondary school by sex, year group, socio-demographic characteristics, and BMI categories in 2015 and 2010 for comparison (%, SE)

VERTICAL JUMP	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	68.4	(2.2)	72.2	(3.2)	70.3	(2.3)	**62.4**	**(1.8) b**
Rural	68.0	(4.5)	75.6	(3.5)	71.7	(3.2)	**54.9**	**(3.9) b**
SES								
Low	67.9	(3.2)	69.1	(4.2)	68.5	(2.6)	**56.8**	**(3.3) b**
Middle	**64.2**	**(3.7) a**	72.9	(2.9)	68.5	(2.9)	**57.9**	**(2.0) b**
High (ref)	72.5	(3.0)	77.7	(4.1)	75.0	(3.1)	**66.8**	**(2.7) b**
Cultural background								
English-speaking (ref)	69.6	(2.1)	76.1	(2.5)	72.8	(1.9)	**60.7**	**(1.8) b**
European	78.2	(10.6)	89.3	(7.5)	84.0	(7.8)	62.2	(8.5)
Middle Eastern	56.8	(9.6)	59.6	(10.5)	**58.1**	**(5.1) a**	47.8	(4.7)
Asian	**55.5**	**(6.2) a**	**51.4**	**(5.9) a**	**53.1**	**(5.1) a**	**65.5**	**(3.1) b**
BMI category								
Thin	67.7	(5.6)	73.3	(7.8)	70.2	(5.3)	60.4	(4.5)
Healthy weight (ref)	71.9	(2.4)	76.1	(2.8)	74.0	(2.2)	**63.8**	**(1.8) b**
Overweight	63.5	(4.0)	**66.1**	**(3.8) a**	**64.8**	**(2.6) a**	**55.0**	**(2.8) b**
Obese	**48.9**	**(5.7) a**	**62.0**	**(7.4) a**	**55.2**	**(4.9) a**	**36.2**	**(4.2) b**
GIRLS								
Locality								
Urban (ref)	64.3	(3.7)	67.1	(4.3)	65.7	(3.4)	59.6	(2.5)
Rural	66.9	(4.6)	75.8	(5.6)	71.2	(3.8)	**48.0**	**(5.4) b**
SES								
Low	67.6	(3.7)	**59.7**	**(5.8) a**	**63.8**	**(3.8) a**	**44.9**	**(4.0) b**
Middle	**55.3**	**(4.7) a**	72.1	(3.5)	**63.8**	**(3.5) a**	58.7	(3.3)
High (ref)	70.6	(4.7)	75.9	(5.6)	73.2	(4.2)	65.2	(3.6)
Cultural background								
English-speaking (ref)	67.1	(2.8)	75.3	(3.3)	71.1	(2.5)	**58.1**	**(2.7) b**
European	71.1	(12.1)	72.3	(15.0)	71.5	(9.7)	**42.4**	**(10.2) b**
Middle Eastern	51.9	(10.9)	51.6	(16.0)	**51.8**	**(9.0) a**	45.0	(6.3)
Asian	**48.2**	**(7.2) a**	**33.6**	**(6.6) a**	**39.3**	**(4.2) a**	**52.7**	**(3.8) b**
BMI category								
Thin	61.7	(7.2)	58.2	(11.1)	60.2	(6.3)	56.0	(5.8)
Healthy weight (ref)	66.9	(4.0)	73.5	(3.9)	70.3	(3.4)	**60.3**	**(2.8) b**
Overweight	64.9	(4.7)	**61.9**	**(4.4) a**	63.4	(3.1)	**49.4**	**(4.3) b**
Obese	**47.4**	**(7.3) a**	54.2	(13.5)	**50.5**	**(8.2) a**	**29.4**	**(5.1) b**

VERTICAL JUMP	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	72.5 (2.9)	77.5 (4.4)	75.0 (3.1)	**64.9 (2.2) b**
Rural	68.9 (5.5)	75.4 (2.9)	72.2 (3.7)	**60.9 (4.0) b**
SES				
Low	68.3 (4.9)	77.2 (4.2)	73.0 (3.2)	68.0 (3.1)
Middle	71.8 (4.1)	73.7 (4.4)	72.7 (3.7)	**57.1 (2.7) b**
High (ref)	74.4 (3.8)	79.8 (5.7)	76.9 (4.1)	68.3 (3.2)
Cultural background				
English-speaking (ref)	71.9 (2.8)	76.8 (3.5)	74.3 (2.6)	**63.1 (2.0) b**
European	100.0 (0.0)	100.0 (0.0)	100.0 (0.0)	74.9 (8.8)
Middle Eastern	61.7 (20.6)	64.8 (12.0)	63.2 (10.6)	51.7 (6.2)
Asian	65.6 (7.2)	79.6 (5.5)	73.7 (4.8)	73.6 (4.3)
BMI category				
Thin	73.8 (7.8)	85.1 (6.0)	79.1 (5.7)	66.5 (6.6)
Healthy weight (ref)	76.8 (2.5)	78.7 (3.8)	77.8 (2.7)	**67.1 (2.0) b**
Overweight	**62.2 (5.9) a**	70.2 (5.5)	**66.0 (4.3) a**	59.2 (3.6)
Obese	**50.7 (8.4) a**	69.0 (8.6)	**59.9 (5.6) a**	**40.2 (5.5) b**

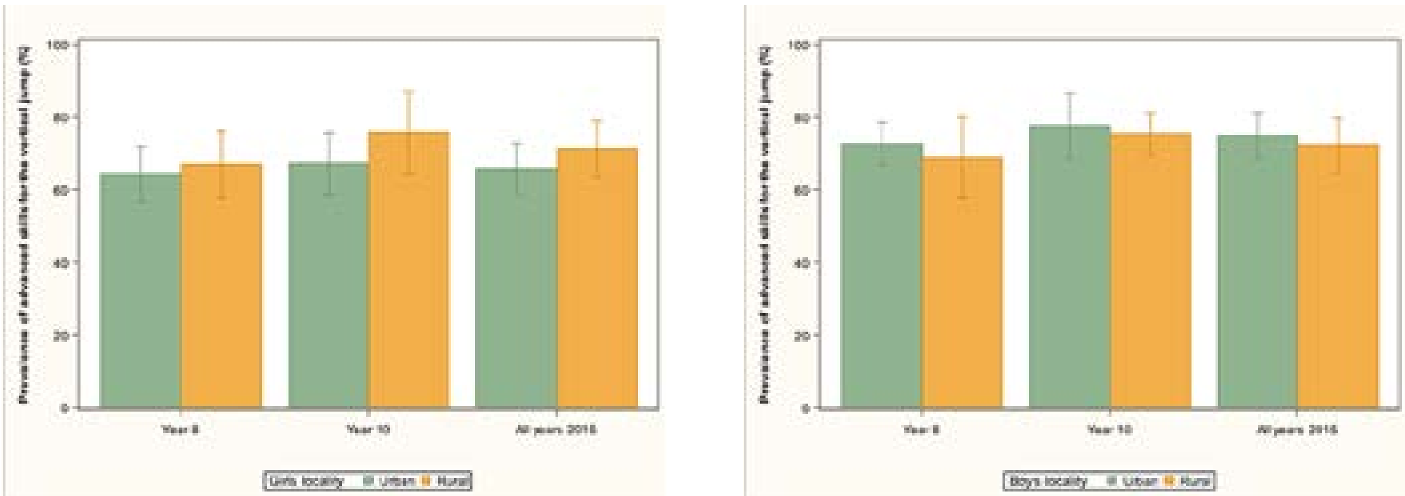
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

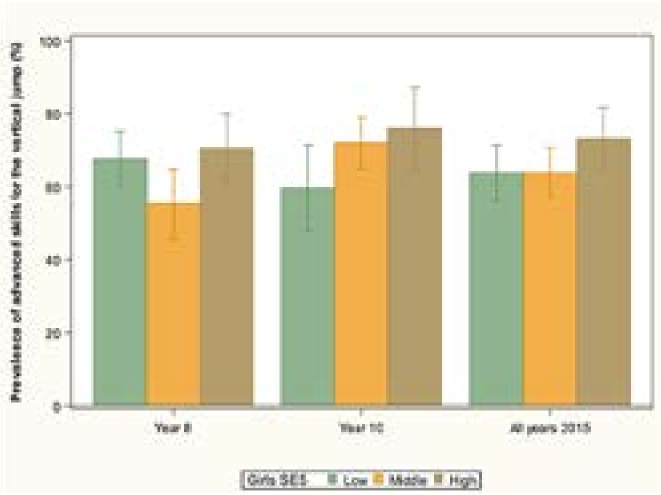
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

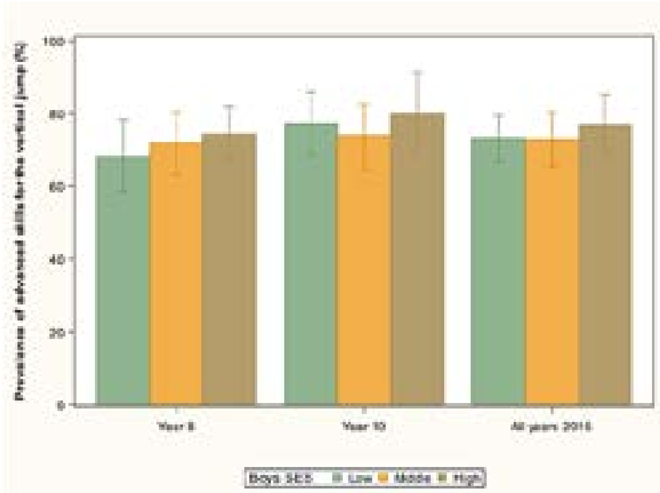
na *Indicates statistical significance could not be calculated due to low numbers.*

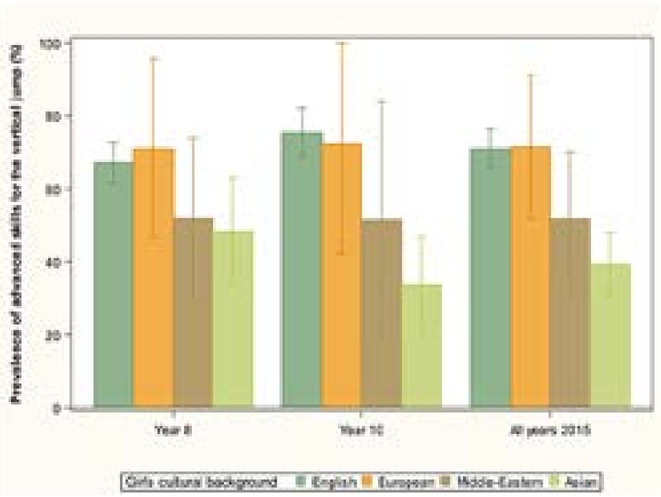
No letter means there was no statistical difference.

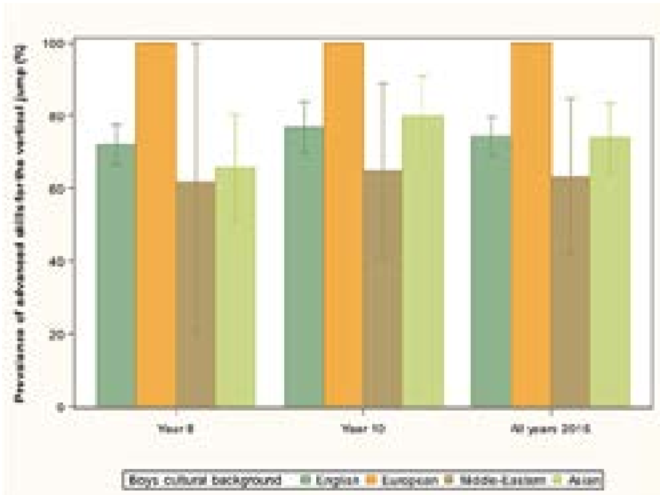
Figure 9.14 Prevalence of advanced skills for the vertical jump among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

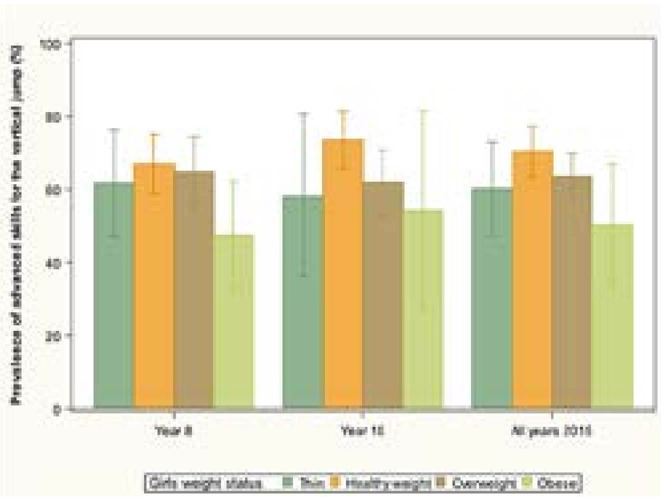


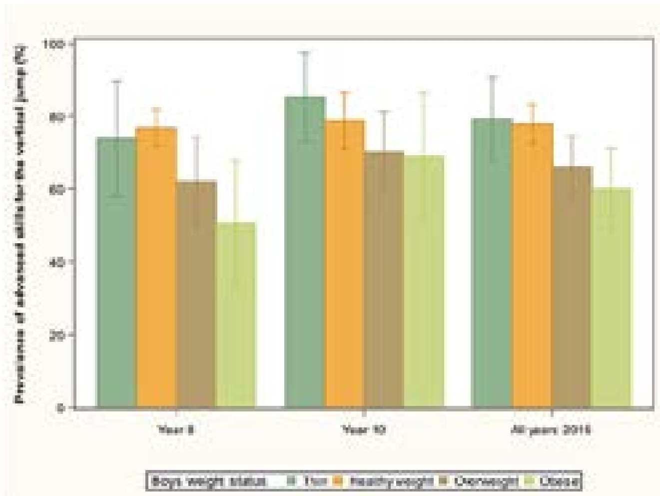

Prevalence of advanced skills for the vertical jump (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls SES Low Middle High


Prevalence of advanced skills for the vertical jump (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys SES Low Middle High


Prevalence of advanced skills for the vertical jump (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls cultural background English European Middle-Eastern Asian


Prevalence of advanced skills for the vertical jump (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys cultural background English European Middle-Eastern Asian


Prevalence of advanced skills for the vertical jump (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Prevalence of advanced skills for the vertical jump (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

VERTICAL JUMP

The current findings indicate that approximately one in three boys (35%) and one in two girls (54%) demonstrated advanced skills in the leap. The difference was significant between boys and girls. Table 9.19 and Figure 9.15 show the prevalence of advanced skills in the leap among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, there were no significant differences in the prevalence of advanced skills in the leap among adolescents from urban and from rural areas.

Change between 2010-2015: Overall, the prevalence of advanced skills in the leap significantly increased among adolescents from urban areas, from 33% in 2010 to 44% in 2015; and from rural areas, from 28% in 2010 to 45% in 2015. The prevalence significantly increased among girls from rural areas, from 42% in 2010 to 56% in 2015; and among boys from urban areas (from 20% in 2010 to 35% in 2015) and from rural areas (from 15% in 2010 to 36% in 2015).

Socio-economic status

2015: Overall, the prevalence of advanced skills in the leap was significantly lower among girls from low SES (47%), compared with girls from high SES backgrounds (58%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the leap significantly increased among adolescents from low SES backgrounds, from 29% in 2010 to 40% in 2015; from middle SES backgrounds, from 30% in 2010 to 47% in 2015; and from high SES backgrounds, from 36% in 2010 to 48% in 2015. The prevalence significantly increased among girls from middle SES backgrounds, from 46% in 2010 to 57% in 2015; and among boys from low SES backgrounds, from 20% in 2010 to 33% in 2015; from middle SES backgrounds, from 16% in 2010 to 37% in 2015; and from high SES backgrounds, from 21% in 2010 to 37% in 2015.

Cultural background

2015: Overall, the prevalence of advanced skills in the leap was significantly lower among adolescents from Middle Eastern (30%) and Asian (25%) Cultural backgrounds, compared with adolescents from English-speaking backgrounds (47%). The prevalence was significant lower among girls from Middle Eastern (34%) and Asian (25%) Cultural backgrounds, compared with girls from English-speaking backgrounds (59%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the leap significantly increased among adolescents from English-speaking backgrounds, from 33% in 2010 to 47% in 2015; and among girls from English-speaking backgrounds, from 47% in 2010 to 59% in 2015; and among boys from English-speaking backgrounds, from 19% in 2010 to 37% in 2015.

Weight status

2015: Overall, the prevalence of advanced skills in the leap was significantly lower among adolescents in the overweight BMI category (37%), compared with adolescents in the healthy weight BMI category (48%). The prevalence was significantly lower among girls in the overweight BMI category (46%), compared with girls in the healthy weight BMI category (57%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the leap significantly increased among adolescents in the thin BMI category, from 29% in 2010 to 45% in 2015; the healthy weight BMI category, from 34% in 2010 to 48% in 2015; the overweight BMI category, from 27% in 2010 to 37% in 2015; and the obese BMI category, from 17% in 2010 to 38% in 2015. The prevalence significantly increased among boys in the thin BMI category, from 12% in 2010 to 38% in 2015; the healthy weight BMI category, from 20% in 2010 to 38% in 2015; in the overweight BMI category, from 17% in 2010 to 29% in 2015; and in the obese BMI category, from 12% in 2010 to 27% in 2015.

Table 9.19 Prevalence of advanced skills for the leap among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015, and 2010 for comparison (%, SE)

LEAP	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	42.3	(3.0)	46.5	(2.9)	44.4	(2.6)	**33.0**	**(2.3) b**
Rural	42.7	(3.6)	46.5	(5.7)	44.5	(4.1)	**27.5**	**(3.5) b**
SES								
Low	40.1	(3.8)	**38.9**	**(4.5) a**	39.5	(3.7)	**28.9**	**(2.4) b**
Middle	43.3	(3.3)	49.7	(3.1)	46.5	(2.8)	**29.7**	**(2.7) b**
High (ref)	43.9	(4.2)	51.9	(3.7)	47.8	(3.1)	**36.4**	**(3.4) b**
Cultural background								
English-speaking (ref)	44.7	(2.6)	49.5	(2.8)	47.0	(2.3)	**32.5**	**(2.2) b**
European	51.5	(11.4)	57.1	(18.2)	54.3	(10.0)	33.0	(6.3)
Middle Eastern	**28.0**	**(6.7) a**	32.6	(8.8)	**30.1**	**(5.5) a**	29.6	(6.4)
Asian	**24.6**	**(3.7) a**	**25.6**	**(4.2) a**	**25.2**	**(2.0) a**	23.0	(3.6)
BMI category								
Thin	55.1	(6.6)	**31.2**	**(6.1) a**	44.5	(4.2)	**28.9**	**(4.0) b**
Healthy weight (ref)	43.3	(2.8)	51.8	(3.0)	47.5	(2.4)	**34.1**	**(2.2) b**
Overweight	39.5	(3.3)	**34.5**	**(5.0) a**	**37.1**	**(3.1) a**	**27.2**	**(2.4) b**
Obese	**30.6**	**(5.3) a**	46.3	(9.2)	38.0	(5.6)	**17.4**	**(4.2) b**
GIRLS								
Locality								
Urban (ref)	51.1	(4.1)	55.4	(3.8)	53.3	(3.2)	47.4	(3.4)
Rural	54.6	(5.7)	56.5	(6.8)	55.5	(5.1)	**41.7**	**(5.3) b**
SES								
Low	48.3	(5.3)	**44.7**	**(5.6) a**	**46.6**	**(4.7)a**	39.0	(4.1)
Middle	52.4	(4.6)	61.6	(5.4)	57.0	(4.1)	**46.0**	**(3.7) b**
High (ref)	55.5	(5.1)	61.1	(4.6)	58.3	(3.3)	52.1	(4.5)
Cultural background								
English-speaking (ref)	56.1	(3.3)	61.1	(3.9)	58.5	(2.6)	**47.1**	**(3.2) b**
European	59.2	(14.3)	84.5	(15.1)	67.2	(8.6)	63.8	(9.8)
Middle Eastern	**35.2**	**(7.5) a**	**33.1**	**(13.3) a**	**34.4**	**(6.0) a**	35.7	(8.0)
Asian	**23.2**	**(5.8) a**	**26.7**	**(4.8) a**	**25.4**	**(3.3) a**	34.5	(7.0)
BMI category								
Thin	64.3	(8.0)	**33.8**	**(7.3) a**	51.7	(6.1)	41.2	(6.2)
Healthy weight (ref)	51.8	(4.3)	62.1	(4.1)	57.0	(3.0)	49.1	(3.1)
Overweight	50.9	(4.2)	**40.4**	**(7.0) a**	**45.7**	**(4.0) a**	40.0	(4.8)
Obese	45.2	(8.9)	56.0	(14.2)	49.9	(9.5)	27.3	(8.7)

LEAP	2015						2010	
	Year 8		Year 10		All years		All years	
BOYS								
Locality								
Urban (ref)	33.6	(3.5)	37.3	(3.7)	35.4	(2.9)	**19.7**	**(1.7) b**
Rural	32.3	(5.0)	38.5	(7.0)	35.5	(5.6)	**14.8**	**(3.0) b**
SES								
Low	31.6	(4.3)	33.9	(4.9)	32.8	(4.1)	**19.5**	**(2.6) b**
Middle	35.6	(4.3)	38.5	(4.2)	37.0	(3.7)	**15.8**	**(2.4) b**
High (ref)	32.5	(5.8)	41.4	(6.1)	36.7	(4.3)	**20.9**	**(2.0) b**
Cultural background								
English-speaking (ref)	34.3	(3.4)	38.8	(3.5)	36.5	(2.8)	**18.9**	**(1.7) b**
European	27.9	(23.8)	42.8	(22.8)	38.7	(13.4)	13.3	(7.3)
Middle Eastern	20.9	(9.5)	32.2	(12.4)	26.6	(8.2)	21.2	(7.8)
Asian	26.6	(7.9)	23.9	(7.1)	25.1	(4.9)	15.8	(3.2)
BMI category								
Thin	46.0	(9.6)	29.1	(9.2)	38.0	(6.8)	**11.6**	**(3.4) b**
Healthy weight (ref)	34.9	(3.3)	41.5	(3.6)	38.2	(2.9)	**20.0**	**(1.6) b**
Overweight	29.4	(4.3)	**28.9**	**(5.3) a**	**29.1**	**(3.8) a**	**17.3**	**(2.7) b**
Obese	**15.1**	**(5.3) a**	38.6	(11.2)	26.9	(6.0)	**11.6**	**(3.6) b**

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

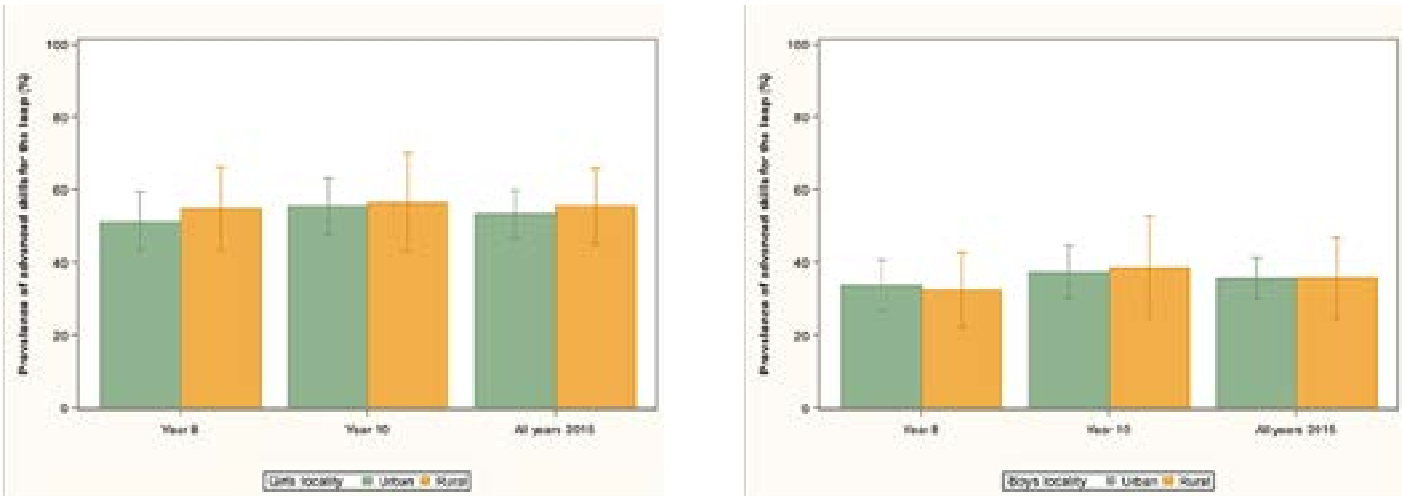
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

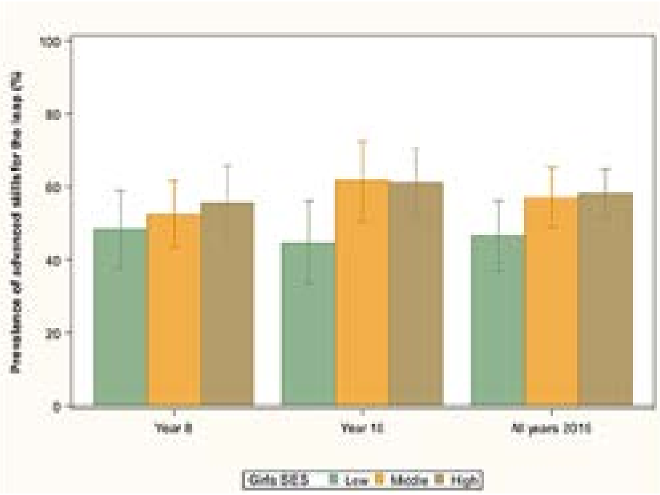
na *Indicates statistical significance could not be calculated due to low numbers.*

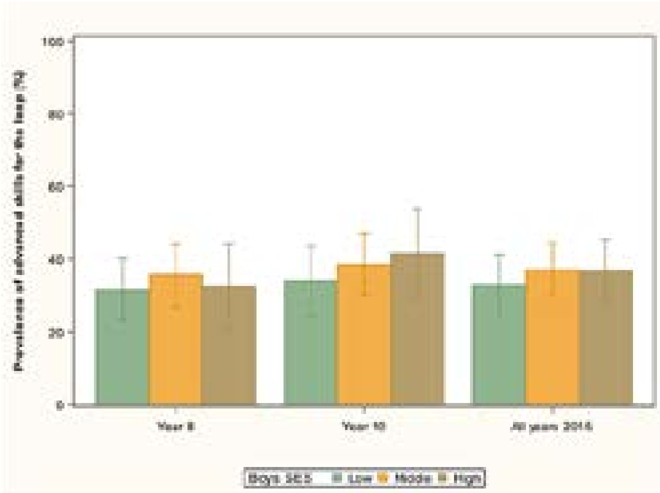
No letter means there was no statistical difference.

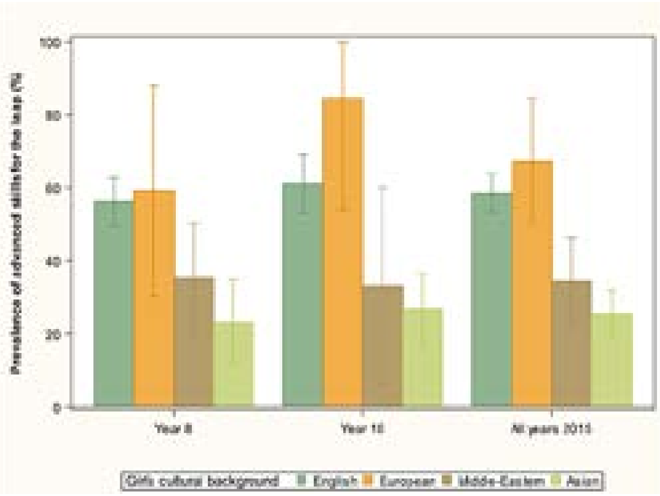
e.

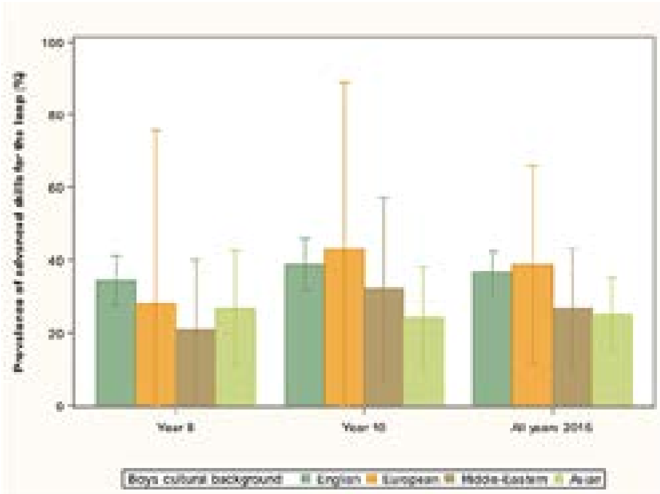
Figure 9.15 Prevalence of advanced skills for the leap among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

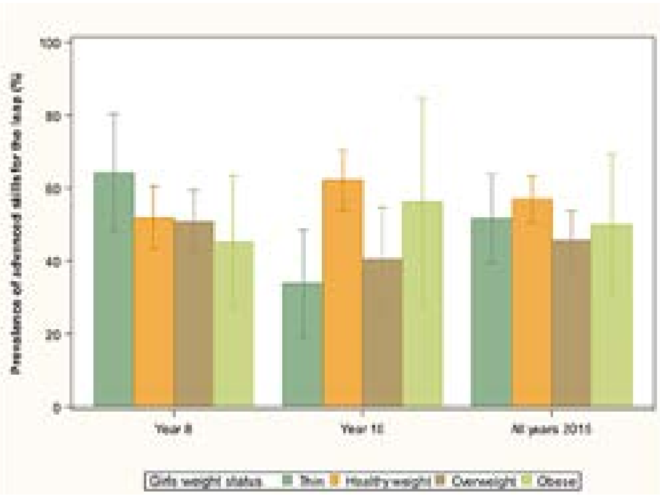


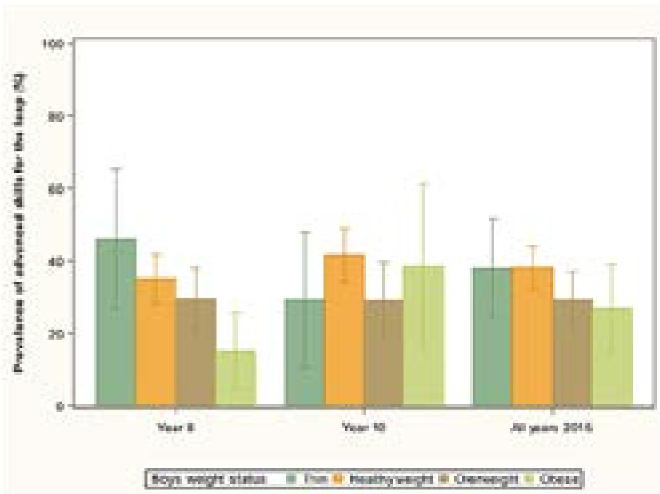

Prevalence of advanced skills for the leap (%)
Year 8
Year 10
All years 2015
Girls SES Low Middle High


Prevalence of advanced skills for the leap (%)
Year 8
Year 10
All years 2015
Boys SES Low Middle High


Prevalence of advanced skills for the leap (%)
Year 8
Year 10
All years 2015
Girls cultural background English European Middle-Eastern Asian


Prevalence of advanced skills for the leap (%)
Year 8
Year 10
All years 2015
Boys cultural background English European Middle-Eastern Asian


Prevalence of advanced skills for the leap (%)
Year 8
Year 10
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Prevalence of advanced skills for the leap (%)
Year 8
Year 10
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

SPRINT RUN

The current findings indicate that approximately two in three boys (70%) and one in two girls (55%) demonstrated advanced skills in the sprint run. The difference was significant between boys and girls. Table 9.20 and Figure 9.16 show the prevalence of advanced skills in the sprint run among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of advanced skills in the sprint run was significantly higher among girls from rural areas (63%), compared with girls from urban areas (52%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the sprint run significantly increased among adolescents from rural areas, from 52% in 2010 to 67% in 2015. The prevalence significantly increased among girls from rural areas, from 40% in 2010 to 63% in 2015; and among boys from urban areas, from 62% in 2010 to 71% in 2015.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of advanced skills in the sprint run between adolescents from different SES backgrounds.

Change between 2010-2015: Overall, the prevalence of advanced skills in the sprint run significantly increased among adolescents from middle SES backgrounds, from 56% in 2010 to 65% in 2015; and among boys from middle SES backgrounds (from 59% in 2010 to 73% in 2015) and from high SES backgrounds (from 65% in 2010 to 73% in 2015).

Cultural background

2015: Overall, the prevalence of advanced skills in the sprint run was significantly lower among adolescents from Middle Eastern (49%) and Asian (44%) cultural backgrounds, compared with adolescents from English-speaking backgrounds (66%). The prevalence was significant lower among girls from Middle Eastern (41%) and Asian (29%) cultural backgrounds, compared with girls from English-speaking backgrounds (60%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the sprint run significantly increased among adolescents from English-speaking backgrounds, from 58% in 2010 to 66% in 2015; and significantly decreased among adolescents from Asian cultural backgrounds, from 54% in 2010 to 44% in 2015. The prevalence significantly decreased among girls from Asian cultural backgrounds, from 49% in 2010 to 29% in 2015; and the prevalence significantly increased among boys from English-speaking backgrounds, from 62% in 2010 to 71% in 2015.

Weight status

2015: Overall, the prevalence of advanced skills in the sprint run was significantly lower among adolescents in the overweight (54%) and obese (42%) BMI categories, compared with adolescents in the healthy weight BMI category (68%). The prevalence was significantly lower among girls in the overweight (47%) and obese (30%) BMI categories, compared with girls in the healthy weight BMI category (60%); and among boys in the overweight (60%) and obese (54%) BMI categories, compared with boys in the healthy weight BMI category (75%).

Change between 2010-2015: Overall, the prevalence of advanced skills in the sprint run significantly increased among adolescents in the healthy weight BMI category (from 61% in 2010 to 68% in 2015), and in the obese BMI category (from 30% in 2010 to 42% in 2015); and among boys in the healthy weight BMI category (from 67% in 2010 to 75% in 2015), and in the obese BMI category (from 30% in 2010 to 54% in 2015).

Table 9.20 Prevalence of advanced skills for the sprint run among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015, and 2010 for comparison (%, SE)

SPRINT RUN	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	59.6	(3.4)	63.2	(3.4)	61.4	(3.0)	59.5	(2.2)
Rural	64.3	(4.8)	69.2	(6.4)	66.7	(3.5)	**52.0**	**(2.7) b**
SES								
Low	56.8	(5.1)	60.1	(5.8)	58.5	(4.3)	54.5	(2.2)
Middle	62.0	(4.4)	67.3	(4.4)	64.6	(3.7)	**55.7**	**(3.1) b**
High (ref)	64.0	(2.9)	67.7	(3.5)	65.8	(2.5)	62.7	(3.0)
Cultural background								
English-speaking (ref)	63.3	(2.9)	67.8	(3.2)	65.5	(2.3)	**58.3**	**(2.0) b**
European	53.0	(11.7)	83.7	(12.1)	68.5	(7.9)	53.3	(10.0)
Middle Eastern	**39.9**	**(11.3) a**	59.1	(12.4)	**48.7**	**(9.5) a**	55.6	(4.9)
Asian	**45.4**	**(7.2) a**	**42.7**	**(5.0) a**	**43.8**	**(5.0) a**	**53.8**	**(2.9) b**
BMI category								
Thin	67.2	(5.4)	59.9	(7.7)	63.9	(5.1)	61.5	(4.8)
Healthy weight (ref)	66.8	(3.3)	68.4	(3.3)	67.6	(2.6)	**61.2**	**(2.0) b**
Overweight	46.7	(3.9) a	60.9	(4.7)	**53.6**	**(3.6) a**	49.6	(2.9)
Obese	**44.1**	**(7.4)**	**40.3**	**(7.8) a**	**42.3**	**(4.8) a**	**30.3**	**(3.9) b**
GIRLS								
Locality								
Urban (ref)	50.9	(4.3)	53.7	(4.4)	52.3	(3.7)	56.8	(3.5)
Rural	61.7	(6.5)	64.4	(7.8)	**63.0**	**(4.0) a**	**40.4**	**(3.8) b**
SES								
Low	51.8	(5.7)	50.6	(6.9)	51.2	(4.8)	45.8	(3.2)
Middle	53.2	(5.9)	57.3	(6.0)	55.3	(4.8)	51.3	(4.3)
High (ref)	56.0	(5.3)	61.0	(4.9)	58.5	(4.4)	60.8	(4.9)
Cultural background								
English-speaking (ref)	57.2	(3.8)	61.9	(4.2)	59.5	(3.1)	54.0	(3.3)
European	52.1	(14.1)	52.7	(28.3)	52.3	(15.0)	39.1	(12.9)
Middle Eastern	40.3	(11.4)	40.9	(16.8)	**40.5**	**(8.7) a**	50.1	(7.0)
Asian	**31.2**	**(5.6) a**	**26.9**	**(6.5) a**	**28.6**	**(3.8) a**	**48.9**	**(6.5) b**
BMI category								
Thin	57.8	(7.3)	**39.7**	**(10.5) a**	50.4	(6.8)	59.0	(5.7)
Healthy weight (ref)	58.8	(4.0)	61.7	(4.1)	60.3	(3.1)	54.7	(3.4)
Overweight	**42.6**	**(5.2) a**	50.7	(8.4)	**46.6**	**(5.8) a**	47.6	(4.1)
Obese	**34.7**	**(10.0) a**	**23.7**	**(9.6) a**	**29.8**	**(5.1)a**	30.9	(6.5)

SPRINT RUN	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	68.3 (4.0)	72.9 (3.2)	70.6 (3.0)	**61.9 (2.1) b**
Rural	66.5 (5.8)	73.0 (7.0)	69.8 (5.1)	62.3 (1.9)
SES				
Low	62.0 (6.3)	68.2 (6.3)	65.3 (5.3)	62.6 (2.2)
Middle	69.5 (5.2)	76.7 (4.0)	73.0 (3.8)	**59.4 (3.2) b**
High (ref)	71.9 (3.5)	75.1 (3.9)	73.4 (2.5)	**64.5 (3.0) b**
Cultural background				
English-speaking (ref)	68.9 (3.3)	73.2 (3.5)	71.0 (2.6)	**62.4 (1.8) b**
European	55.8 (25.6)	100.0 (0.0)	88.1 (8.8)	61.8 (12.1)
Middle Eastern	**39.6 (15.5) a**	70.8 (13.2)	55.3 (13.0)	63.5 (6.1)
Asian	65.1 (11.4)	67.7 (6.6)	66.6 (6.8)	57.0 (3.4)
BMI category				
Thin	76.5 (6.6)	75.3 (7.2)	75.9 (4.6)	65.2 (6.7)
Healthy weight (ref)	74.6 (3.8)	74.9 (3.5)	74.8 (2.8)	**67.3 (1.7) b**
Overweight	**50.4 (5.1) a**	70.6 (5.0)	**60.0 (4.0) a**	51.2 (4.0)
Obese	**54.2 (9.6) a**	**54.5 (10.9) a**	**54.4 (7.6) a**	**30.0 (5.4) b**

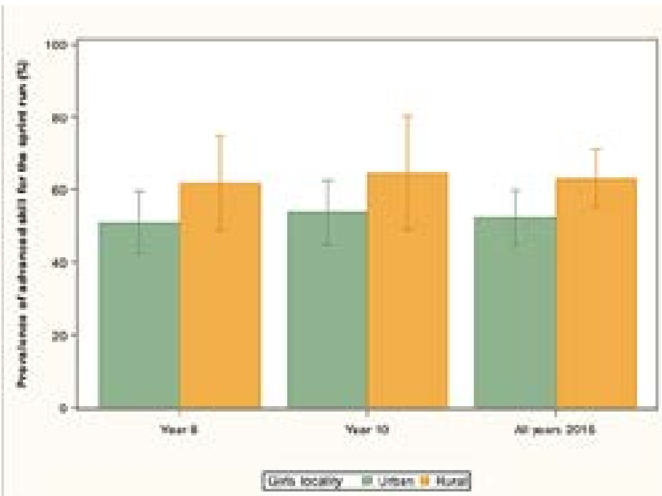
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

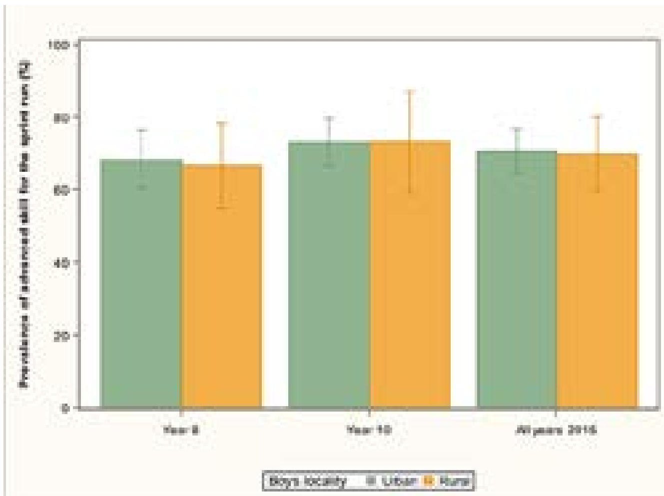
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

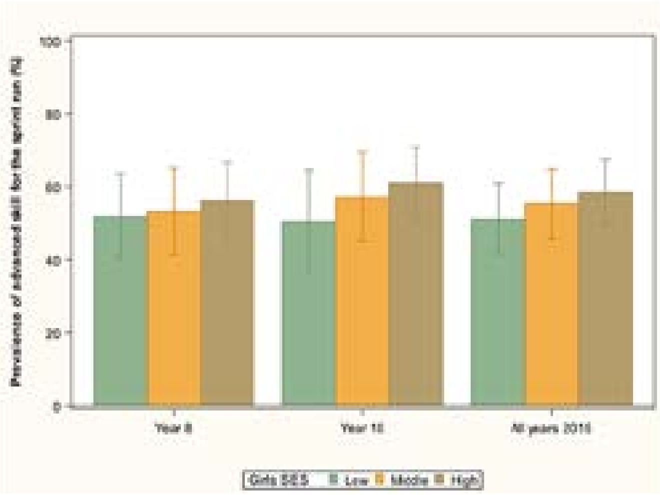
na *Indicates statistical significance could not be calculated due to low numbers.*

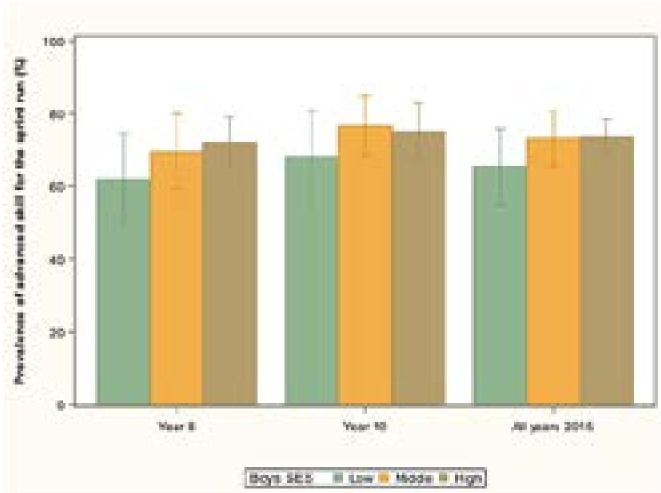
No letter means there was no statistical difference.

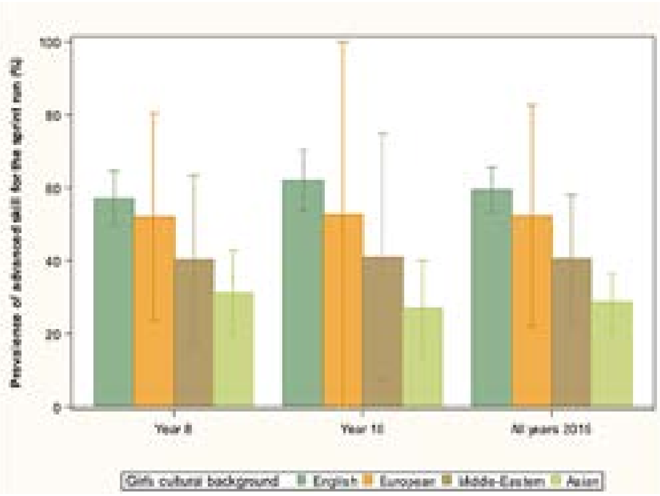
Figure 9.16 Prevalence of advanced skills for the sprint run among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI categories in 2015 (%, 95%CI)

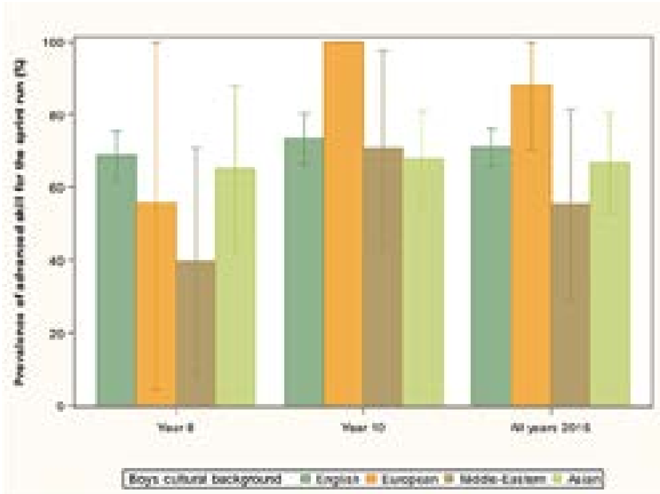


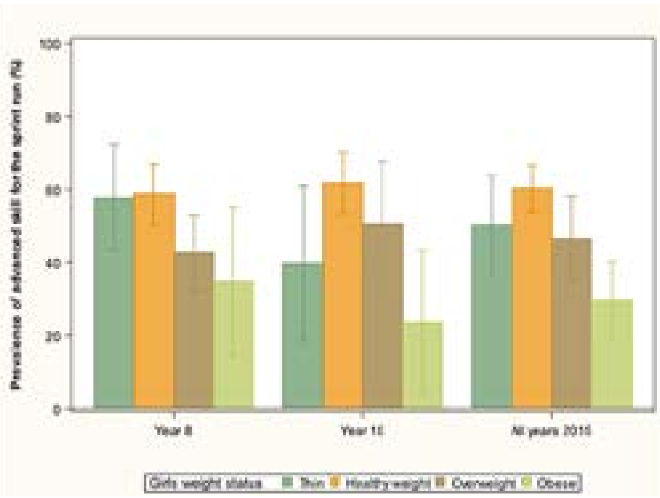


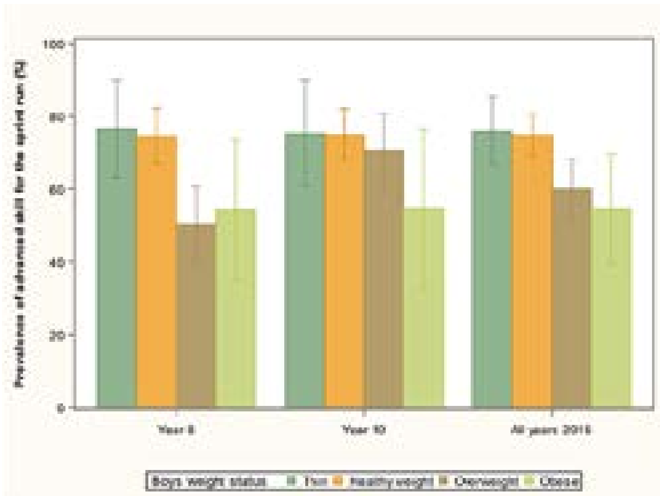

Prevalence of advanced skill for the sprint run (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Prevalence of advanced skill for the sprint run (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Prevalence of advanced skill for the sprint run (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skill for the sprint run (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of advanced skill for the sprint run (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of advanced skill for the sprint run (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

MASTERY OF INDIVIDUAL FMS COMPONENTS

Knowing the prevalence of advanced skills of each FMS component is important in terms of fundamental movement skill pedagogy. The prevalence of advanced skills for each component of each FMS among boys and girls in Years 8 and 10 are given in Tables 9.21 and 9.22, respectively. Identifying particular skill components where children are less proficient is a useful guide for those involved in the delivery of programs that target FMS development.

Table 9.21 Prevalence of mastery for each FMS component among boys, by year group (%)

SKILL AND SKILL COMPONENTS	Year 8	Year 10
Catch		
Eyes focused on the object throughout the catch	99.2	99.6
Feet move to place the body in line with the object	74.0	75.4
Hands move to meet the object	99.5	99.1
Hands and fingers relaxed and slightly cupped to catch the object	89.7	94.0
Catch and control object with hands only (well-timed closure)	96.7	96.9
Elbows bend to absorb the force of the object	81.5	86.3
Kick		
Eyes focused on the ball throughout the kick	97.9	99.3
Forward and sideward swing of arm opposite kicking	69.6	72.4
Non-kicking foot placed beside the ball	86.5	93.6
Bend knee of kicking leg at least 90 degrees during the back swing	83.7	87.7
Contact ball with top of the foot (a "shoelace" kick) or instep	75.8	82.2
Kicking leg follows through high towards the target area	80.8	83.1
Over-arm throw		
Eyes focused on target throughout the throw	98.5	99.3
Stands side-on to target area	81.9	80.6
Throwing arm moves in a downward and backward arc	84.8	88.5
Step towards target area with foot opposite throwing arm	89.3	92.1
Hips then shoulders rotate forward	52.5	62.2
Throwing arm follows through down and across the body	76.1	81.3
Side gallop		
Smooth rhythmical movement	88.5	95.5
Brief period where both feet are off the ground	94.8	96.1
Weight on the balls of the feet	84.6	90.0
Hips and shoulders point to the front	94.8	94.5
Head stable, eyes focused forward or in the direction of travel	97.3	97.6
Vertical jump		
Eyes focused forward or upward throughout the jump	96.8	98.4
Crouch with knees bent and arms behind the body	78.5	80.0
Forceful forward and upward swing of the arms	75.5	77.0
Legs straighten in the air	90.9	87.8
Lands on balls of the feet and bends knees to absorb landing	67.0	79.9
Controlled landing with no more than one step in any direction	87.5	91.2

SKILL AND SKILL COMPONENTS	Year 8	Year 10
Leap		
Eyes focused forward throughout the leap	98.1	98.2
Knee of take-off leg bends	73.9	76.4
Legs straighten during flight	40.3	43.1
Arms held in opposition to the legs	50.4	45.6
Trunk leans slightly forward	89.3	88.4
Lands on ball of the foot and bends knee to absorb landing	44.0	48.3
Sprint run		
Lands on ball of the foot	72.8	75.9
Non-support knee bent at least 90 degrees during the recovery phase	83.2	91.3
High knee lift, thigh almost parallel to the ground	65.5	62.0
Head and trunk stable, eyes focused forward	95.0	94.6
Elbows bent at 90 degrees	85.4	87.7
Arms drive forward and back in opposition to legs	88.9	91.0

Table 9.22 Prevalence of mastery for each FMS component among girls, by year group (%)

SKILL AND SKILL COMPONENTS	Year 8	Year 10
Catch		
Eyes focused on the object throughout the catch	99.4	99.6
Feet move to place the body in line with the object	68.4	69.0
Hands move to meet the object	98.9	99.9
Hands and fingers relaxed and slightly cupped to catch the object	87.5	86.6
Catch and control object with hands only (well-timed closure)	88.4	92.8
Elbows bend to absorb the force of the object	65.0	68.6
Kick		
Eyes focused on the ball throughout the kick	97.5	98.3
Forward and sideward swing of arm opposite kicking	33.0	38.0
Non-kicking foot placed beside the ball	64.6	68.0
Bend knee of kicking leg at least 90 degrees during the back swing	63.9	71.1
Contact ball with top of the foot (a "shoelace" kick) or instep	52.8	60.9
Kicking leg follows through high towards the target area	59.0	62.5
Over-arm throw		
Eyes focused on target throughout the throw	98.6	99.6
Stands side-on to target area	55.4	53.4
Throwing arm moves in a downward and backward arc	72.4	74.3
Step towards target area with foot opposite throwing arm	71.4	73.5
Hips then shoulders rotate forward	29.7	30.6
Throwing arm follows through down and across the body	44.8	53.4
Side gallop		
Smooth rhythmical movement	89.1	93.5
Brief period where both feet are off the ground	92.9	94.4
Weight on the balls of the feet	89.6	91.1
Hips and shoulders point to the front	91.1	93.9
Head stable, eyes focused forward or in the direction of travel	96.4	95.9

SKILL AND SKILL COMPONENTS	Year 8	Year 10
Vertical jump		
Eyes focused forward or upward throughout the jump	97.6	97.1
Crouch with knees bent and arms behind the body	63.2	62.9
Forceful forward and upward swing of the arms	68.8	72.4
Legs straighten in the air	90.5	93.3
Lands on balls of the feet and bends knees to absorb landing	69.0	74.6
Controlled landing with no more than one step in any direction	91.0	91.3
Leap		
Eyes focused forward throughout the leap	97.7	95.4
Knee of take-off leg bends	74.5	73.9
Legs straighten during flight	61.9	63.4
Arms held in opposition to the legs	60.6	60.6
Trunk leans slightly forward	89.1	88.9
Lands on ball of the foot and bends knee to absorb landing	59.3	57.3
Sprint run		
Lands on ball of the foot	61.6	65.4
Non-support knee bent at least 90 degrees during the recovery phase	80.3	76.1
High knee lift, thigh almost parallel to the ground	47.4	50.1
Head and trunk stable, eyes focused forward	93.7	92.2
Elbows bent at 90 degrees	74.1	77.2
Arms drive forward and back in opposition to legs	81.6	81.7

SUMMARY OF THE FUNDAMENTAL MOVEMENT SKILL PROFICIENCY OF ADOLESCENTS IN SECONDARY SCHOOL

The table below summarises the prevalence of advanced skills for each FMS, by sex among adolescents in secondary school

FMS	Australian guidelines	SPANS benchmark	Prevalence (%)			Significant subgroup findings for 2015* & change between 2010-2015
			Sex	2010	2015	
Catch	There are no specific guidelines	Advanced skills	Girls	79%	74%	**2015:** Overall, the proportion of adolescents demonstrating advanced skill in the catch was significantly lower only among adolescents from European cultural backgrounds **Change between 2010-15**: Overall, there were no significant changes in advanced skills for the catch between 2010 and 2015. Within subgroups, the prevalence significantly decreased among adolescents from European cultural backgrounds
			Boys	89%	87%	
Kick	There are no specific guidelines	Advanced skills	Girls	27%	33%	**2015:** Overall, the proportion of adolescents demonstrating advanced skill in the kick was significantly lower among adolescents from Asian cultural backgrounds, and among adolescents in the overweight and obese BMI categories **Change between 2010-15**: Overall, and within subgroups, there were no significant changes in advanced skills for the kick between 2010 and 2015
			Boys	73%	74%	
Over-arm throw	There are no specific guidelines	Advanced skills	Girls	26%	30%	**2015:** Overall, the proportion of adolescents demonstrating advanced skill in the over-arm throw was significantly higher among adolescents from rural areas and low SES backgrounds and was significantly lower among adolescents from Asian cultural backgrounds **Change between 2010-15**: Overall, there were no significant changes in advanced skills for the over-arm throw between 2010 and 2015. Within subgroups, the prevalence significantly increased only among adolescents from Middle Eastern cultural backgrounds
			Boys	72%	67%	
Side gallop	There are no specific guidelines	Advanced skills	Girls	94%	93%	**2015:** Overall, the proportion of adolescents demonstrating advanced skill in the side gallop was significantly higher among adolescents from rural areas, and significantly lower among adolescents in the overweight and obese BMI categories **Change between 2010-15**: Overall, there were no significant changes in advanced skills for the side gallop in girls between 2010 and 2015. Within subgroups, the prevalence significantly increased among adolescents from rural areas, high SES backgrounds, English-speaking backgrounds and in the healthy weight BMI category. The prevalence significantly decreased among adolescents from Middle Eastern cultural backgrounds
			Boys	88%	93% sig	

FMS	Australian guidelines	SPANS benchmark	Prevalence (%)			Significant subgroup findings for 2015* & change between 2010-2015
			Sex	2010	2015	
Vertical jump	There are no specific guidelines	Advanced skills	Girls	57%	67% sig	**2015:** Overall, the proportion of children demonstrating advanced skill in the vertical jump was significantly lower among children from low SES backgrounds, Middle Eastern and Asian cultural backgrounds and the overweight and obese BMI categories
			Boys	64%	74% sig	**Change between 2010-15**: : Overall, the proportion of adolescents demonstrating advanced skill in the vertical jump significantly increased between 2010 and 2015. Within subgroups, the prevalence significantly increased among adolescents from rural and urban areas, each SES tertile, English-speaking and Asian cultural backgrounds, and those in the healthy weight, overweight and obese BMI categories
Leap	There are no specific guidelines	Advanced skills	Girls	46%	54%	**2015:** Overall, the proportion of adolescents demonstrating advanced skill in the leap was significantly lower among adolescents from Middle Eastern and Asian cultural backgrounds and in the overweight BMI category
			Boys	19%	35% sig	**Change between 2010-15**: Overall, there were no significant changes in advanced skills for the leap in girls between 2010 and 2015. Within subgroups, the prevalence significantly increased among adolescents from rural and urban areas, each SES tertile, English-speaking backgrounds and in each BMI category
Sprint run	There are no specific guidelines	Advanced skills	Girls	53%	55%	**2015:** Overall, the proportion of adolescents demonstrating advanced skill in the sprint run was significantly lower among adolescents Middle Eastern and Asian cultural backgrounds and in the overweight and obese BMI categories
			Boys	62%	70% sig	**Change between 2010-15**: Overall, there were no significant changes in advanced skills for the sprint run in girls between 2010 and 2015. Within sub-groups, the prevalence significantly increased among adolescents from rural areas, middle SES backgrounds, English-speaking backgrounds and those in the healthy weight and obese BMI categories, and significantly decreased among adolescents from Asian cultural backgrounds

sig *Indicates statistically significant difference at P < 0.05. *Comparisons are between rural compared with urban; low and middle SES compared with high SES; and European, Middle Eastern and Asian Cultural backgrounds compared with English-speaking Cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

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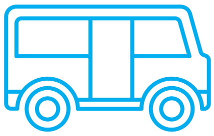
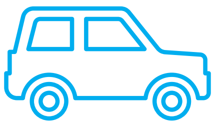
CHAPTER 10: SCHOOL TRAVEL

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5 TO 16 YEARS



18.8% of children and adolescents used public transport



The proportion of children and adolescents driven to school by car has significantly increased from **36%** in 2010 to **43%** in 2015.

2015

- **Travel to school**
  - 14.5% of children and adolescents used active travel; median trip time, 9.3 mins
  - 18.8% of children and adolescents used public transport; median trip time, 29.2 mins
  - 43.2% of children and adolescents were driven by car; median trip time, 9.2 mins
  - 23.6% of children and adolescents used mixed travel modes; median trip time, 13.9 mins

- **Travel home from school**
  - 16.6% of children and adolescents used active travel; median trip time, 9.4 mins
  - 22.3% of children and adolescents used public transport; median trip time, 29.1 mins
  - 37.2% of children and adolescents were driven by car; median trip time, 9.3 mins
  - 23.9% of children and adolescents used mixed travel modes; median trip time, 14.9 mins

SIGNIFICANT CHANGES BETWEEN 2010-2015

- **The proportion of children and adolescents driven to school by car has significantly increased from 36% in 2010 to 43% in 2015.**

  Significant changes in this indicator were observed among children and adolescents from:

  - Urban areas, from 37% in 2010 to 47% in 2015
  - High SES backgrounds, from 33% in 2010 to 45% in 2015
  - English-speaking backgrounds, from 36% in 2010 to 42% in 2015; and Middle Eastern cultural backgrounds, from 45% in 2010 to 66% in 2015
  - Healthy weight BMI category, from 35% in 2010 to 43% in 2015; and in the obese BMI category, from 38% in 2010 to 51% in 2015

CONTEXT

Every weekday approximately one million children in NSW use a range of transport modes to travel to school. How children and adolescents travel to school is of interest to public health practitioners and policy makers for health, planning and environmental reasons. Travel to school is complex and may be categorised into four broad groups: active travel, public transport, car and mixed modes.

Active travel refers to any mode of transport used to travel from one destination to another that involves physical activity. This includes walking, cycling, scootering and skateboarding, and can include using public transport. Active travel is often overlooked as a factor that may contribute towards daily physical activity, which in turn is associated with better bone health, decreased cardiovascular risk and improved psychosocial well-being.[1] Environmentally, increasing children's active travel to school may contribute to a reduction in traffic congestion and carbon emissions around schools.[2]

Using public transport to commute to school is regarded as 'active transport' as it involves some walking or cycling to a transit stop, transfers and a walk to the end location (i.e., school). Research on children's use of public transport for school commuting is sparse; however studies among adults suggest that people who use public transport are more likely to have higher physical activity, be less sedentary and have lower rates of obesity, compared with people who use private transport modes.[3, 4] Understanding the correlates of children's use of public transport needs to be improved, given the high levels of dependence on car travel and the adverse health and environmental impacts of car use. Efforts to promote public transport among school age children will need to examine issues including access, availability, frequency and costs.

Since the 1970s, the proportion of Australian children actively commuting to school has declined substantially and has coincided with a significant increase in the number of children being driven to school;[5, 6] a trend observed in many other countries.[7-10] Parents chauffeuring their children may potentially establish a pattern of car dependence, which could track from adolescence to adulthood.[11] The reasons for the decline in active school commuting are complex but one significant factor contributing to the change is parents' work schedules and location.[12, 13]

Other consistent correlates of school travel, and active school commuting in particular, include child age, distance to school, household income, traffic fears and crime fears, and parental attitudes.[14-16] In addition, environmental factors including urban form, the neighbourhood built environment and land use planning are strongly associated with children's active commuting to school.[17, 18] Hence efforts to promote active travel to school will differ according to the many socio-demographic and neighbourhood-enabling factors and barriers; and potentially involve collaborations between agencies involved in transport node development, town planning and workplace employment practices (locations, work hours).[19, 20]

The health benefits of active travel to school, and in particularly the contribution towards increasing children's daily physical activity levels, are well documented.[21] Study and measurement differences of active school travel have impeded our understanding of other direct health benefits; however it is clear that active school commuting is routine-based and provides a regular physical activity opportunity, and that brisk walking is the most common moderate-intensity physical activity.[22]

SPANS respondents reported the mode of transport (bus, car, ferry, skateboard/scooter, train, walk), the number of days used in each mode of transport (1-5) and trip duration (minutes per trip), to and from school. For the analyses, school travel was categorised into four mutually exclusive transport categories according to travel modes to and/or from school for five days a week as presented below.

Travel category	Transport modes
Active travel	Walking, cycling, skateboard or scooter *on five school days*
Public transport	Travel by train or bus or ferry and/or walking *on five school days*
Car	Travel by car *on five school days*
Mixed mode	Multiple modes of travel i.e., active travel, and/or public transport, and/or car *on five school days*

This chapter reports on the travel modes to and from school among children (Years K 2, 4 and 6) and adolescents (Years 8 and 10) sampled by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison. The findings are presented separately for children in primary school and for adolescents in secondary school. The prevalence estimates (%) need to be interpreted along with their standard errors (SE); a proportionally (to the mean) large standard error means a less precise estimate.

PRIMARY SCHOOL

A methodological factor to consider in the interpretation of the findings on children in primary school is the difference in respondent. Parents reported on behalf of their children in Years K, 2 and 4, while children in Year 6 self-reported. Therefore, any differences in the reported prevalence between younger primary years and Year 6 may result from these different data collection methods.

TRAVEL TO SCHOOL

Tables 10.1, 10.2, 10.3 and 10.4 show the prevalence, mean and median time (minutes per day) spent in active transport, public transport, car and mixed modes of travel to school on five days a week, respectively, for 2015, and for 2010 for comparison. Figures 10.1 and 10.2 show the prevalence and the mean trip time (minutes per day) spent in each travel mode in 2015.

2015: Overall, the prevalence of children's travel modes to school were 15% for active transport, 8% for public transport, 54% for car and 23% for mixed transport. The mean trip times were 10 minutes for active transport, 26 minutes for public transport, 12 minutes for car and 17 minutes for mixed modes.

Change between 2010-2015: The prevalence of travelling to school significantly increased among children travelling by car, from 46% in 2010 to 54% in 2015.

Table 10.1 Prevalence and trip time (minutes per day) spent travelling to school by active transport among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Active transport			
	Boys	Girls	2015	2010
ALL YEARS 2015				
Prevalence (%, SE)	15.4 (1.7)	14.1 (1.6)	14.7 (1.6)	19.3 (1.7)
Mean trip time (mins/day, SE)	10.8 (0.8)	9.8 (0.5)	10.3 (0.5)	13.0 (0.7)
Median trip time (mins/day, IQD*)	9.0 (5.5)	9.1 (8.7)	9.0 (6.9)	9.5 (9.8)
YEAR K				
Prevalence (%, SE)	15.2 (2.5)	16.7 (2.8)	16.0 (2.3)	19.9 (2.4)
Mean trip time (mins/day, SE)	8.5 (0.5)	10.9 (1.2)	9.8 (0.8)	13.6 (1.4)
Median trip time (mins/day, IQD*)	8.1 (5.3)	8.7 (8.4)	8.4 (5.6)	9.3 (9.3)
YEAR 2				
Prevalence (%, SE)	13.8 (2.0)	15.0 (2.4)	14.5 (1.8)	17.2 (2.1)
Mean trip time (mins/day, SE)	7.8 (0.6)	9.8 (1.0)	8.9 (0.5)	12.4 (1.0)
Median trip time (mins/day, IQD*)	5.0 (5.7)	8.2 (6.0)	7.4 (5.7)	9.5 (9.2)
YEAR 4				
Prevalence (%, SE)	14.0 (1.9)	10.9 (1.4)	12.4 (1.5)	**19.1 (2.0) b**
Mean trip time (mins/day, SE)	10.6 (1.5)	9.0 (0.8)	9.9 (1.0)	11.7 (0.9)
Median trip time (mins/day, IQD*)	8.2 (6.0)	7.8 (5.5)	9.0 (5.5)	9.2 (9.7)
YEAR 6				
Prevalence (%, SE)	18.6 (2.6)	**13.2 (1.2) a**	15.9 (1.6)	21.1 (2.2)
Mean trip time (mins/day, SE)	15.4 (2.2)	9.2 (0.8)	12.7 (1.3)	13.9 (1.3)
Median trip time (mins/day, IQD*)	8.8 (10.2)	5.0 (9.3)	9.1 (10.1)	9.5 (13.5)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.
**IQD = inter-quartile difference.*

Table 10.2 Prevalence and trip time (minutes per day) spent travelling to school by public transport, among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Public transport							
	Boys		Girls		2015		2010	
ALL YEARS 2015								
Prevalence (%, SE)	8.0	(1.5)	8.3	(1.2)	8.2	(1.3)	11.1	(1.6)
Mean trip time (mins/day, SE)	26.8	(3.0)	26.1	(1.8)	26.4	(2.2)	31.3	(1.9)
Median trip time (mins/day, IQD*)	19.8	(16.1)	18.8	(21.7)	19.7	(16.0)	24.0	(23.7)
YEAR K								
Prevalence (%, SE)	4.6	(1.2)	3.7	(1.1)	4.2	(0.9)	**7.9**	**(1.2) b**
Mean trip time (mins/day, SE)	20.1	(3.0)	23.0	(5.0)	21.4	(2.9)	24.7	(2.5)
Median trip time (mins/day, IQD*)	15.0	(18.8)	13.3	(19.9)	13.8	(19.2)	18.7	(17.0)
YEAR 2								
Prevalence (%, SE)	10.2	(2.3)	**5.8**	**(1.3) a**	7.9	(1.5)	8.6	(1.5)
Mean trip time (mins/day, SE)	26.2	(2.1)	25.6	(1.9)	26.0	(1.6)	28.9	(3.8)
Median trip time (mins/day, IQD*)	24.0	(19.2)	22.9	(22.1)	24.2	(21.1)	18.9	(22.4)
YEAR 4								
Prevalence (%, SE)	8.4	(1.8)	11.7	(2.2)	10.1	(1.8)	12.8	(2.4)
Mean trip time (mins/day, SE)	27.3	(2.4)	22.3	(2.0)	24.3	(1.9)	30.7	(2.0)
Median trip time (mins/day, IQD*)	19.9	(17.4)	16.2	(19.9)	19.2	(19.2)	26.2	(24.0)
YEAR 6								
Prevalence (%, SE)	9.3	(2.0)	12.9	(1.9)	11.1	(1.5)	15.0	(2.4)
Mean trip time (mins/day, SE)	30.7	(7.7)	30.8	(3.4)	30.8	(4.7)	36.2	(4.0)
Median trip time (mins/day, IQD*)	20.3	(17.5)	23.0	(22.2)	22.5	(19.6)	28.3	(27.2)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.
**IQD = inter-quartile difference.*

Table 10.3 Prevalence and trip time (minutes per day) spent travelling to school by car, among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Car							
	Boys		Girls		2015		2010	
ALL YEARS 2015								
Prevalence (%, SE)	53.0	(3.1)	54.8	(2.4)	53.9	(2.7)	**45.7**	**(2.3) b**
Mean trip time (mins/day, SE)	10.6	(0.6)	12.4	(0.7)	11.6	(0.6)	13.4	(0.8)
Median trip time (mins/day, IQD*)	7.9	(7.4)	9.2	(10.1)	9.1	(9.8)	9.3	(9.2)
YEAR K								
Prevalence (%, SE)	58.1	(4.0)	61.5	(3.4)	59.8	(3.2)	52.6	(3.1)
Mean trip time (mins/day, SE)	9.3	(0.5)	11.3	(0.8)	10.3	(0.6)	13.6	(1.5)
Median trip time (mins/day, IQD*)	7.6	(5.4)	8.5	(8.8)	9.1	(7.8)	9.3	(8.1)
YEAR 2								
Prevalence (%, SE)	57.0	(3.7)	56.8	(3.0)	56.9	(2.9)	51.8	(3.3)
Mean trip time (mins/day, SE)	10.8	(0.9)	12.6	(1.5)	11.8	(0.9)	11.8	(0.8)
Median trip time (mins/day, IQD*)	8.1	(6.9)	8.5	(9.3)	8.3	(8.6)	9.2	(9.0)
YEAR 4								
Prevalence (%, SE)	54.2	(3.6)	54.7	(3.6)	54.5	(3.1)	**45.2**	**(2.7) b**
Mean trip time (mins/day, SE)	10.7	(0.7)	13.3	(1.2)	12.0	(0.9)	13.7	(1.6)
Median trip time (mins/day, IQD*)	6.8	(8.8)	9.0	(9.9)	7.9	(9.7)	8.5	(9.0)
YEAR 6								
Prevalence (%, SE)	41.9	(3.9)	45.1	(3.1)	43.5	(3.1)	**33.7**	**(2.8) b**
Mean trip time (mins/day, SE)	12.2	(1.5)	13.0	(1.2)	12.6	(1.0)	15.2	(2.2)
Median trip time (mins/day, IQD*)	9.0	(9.8)	8.6	(12.3)	9.2	(10.4)	8.8	(10.2)

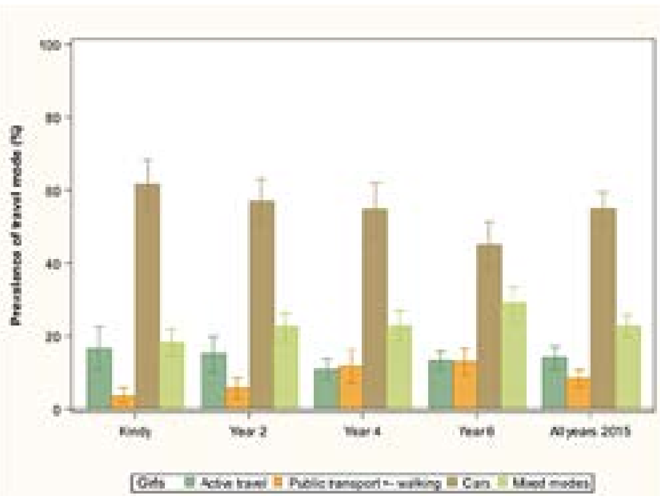
a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *IIndicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.
****IQD*** *= inter-quartile difference.*

Table 10.4 Prevalence and trip time (minutes per day) spent travelling to school by mixed modes of transport, among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Mixed modes			
	Boys	Girls	2015	2010
ALL YEARS 2015				
Prevalence (%, SE)	23.6 (1.7)	22.8 (1.5)	23.2 (1.4)	23.9 (1.3)
Mean trip time (mins/day, SE)	18.2 (2.0)	16.4 (1.3)	17.3 (1.4)	18.9 (1.1)
Median trip time (mins/day, IQD*)	10.8 (11.3)	10.9 (11.0)	10.8 (11.8)	11.9 (12.7)
YEAR K				
Prevalence (%, SE)	22.1 (2.5)	18.1 (1.8)	20.1 (1.7)	19.7 (1.8)
Mean trip time (mins/day, SE)	13.2 (1.2)	12.9 (0.9)	13.1 (0.9)	14.3 (1.4)
Median trip time (mins/day, IQD*)	9.9 (7.0)	9.9 (7.5)	9.9 (7.6)	10.1 (7.1)
YEAR 2				
Prevalence (%, SE)	19.0 (2.1)	22.4 (2.0)	20.8 (1.6)	22.4 (2.1)
Mean trip time (mins/day, SE)	16.8 (2.8)	13.8 (1.3)	15.1 (1.5)	16.8 (1.4)
Median trip time (mins/day, IQD*)	9.0 (8.2)	9.9 (7.9)	9.9 (8.0)	10.8 (10.0)
YEAR 4				
Prevalence (%, SE)	23.4 (2.5)	22.8 (2.1)	23.1 (2.0)	22.9 (1.6)
Mean trip time (mins/day, SE)	16.5 (1.7)	15.5 (1.2)	16.0 (1.3)	18.1 (2.1)
Median trip time (mins/day, IQD*)	10.8 (13.1)	10.7 (12.9)	10.8 (13.0)	11.4 (10.9)
YEAR 6				
Prevalence (%, SE)	30.2 (2.9)	28.8 (2.3)	29.5 (2.1)	30.1 (1.9)
Mean trip time (mins/day, SE)	24.5 (4.2)	21.7 (2.8)	23.1 (3.0)	23.8 (1.7)
Median trip time (mins/day, IQD*)	12.5 (19.2)	13.6 (17.2)	12.8 (17.5)	14.9 (18.1)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *IIndicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.
****IQD** = inter-quartile difference.*

Figure 10.1 Prevalence of travel mode to school among children in primary school by sex and year group in 2015 (%, 95%CI)



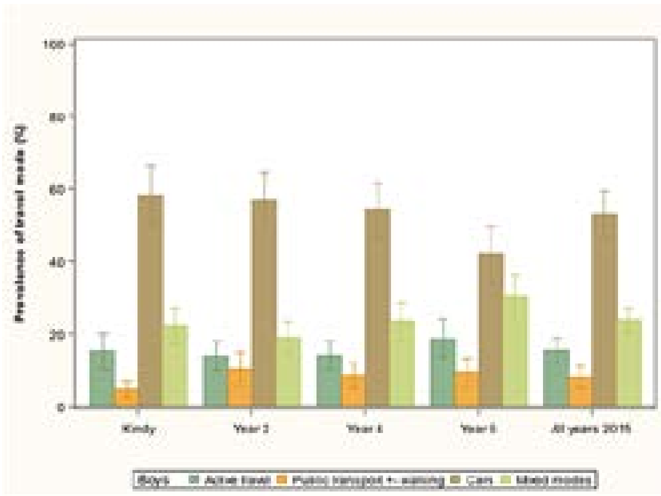
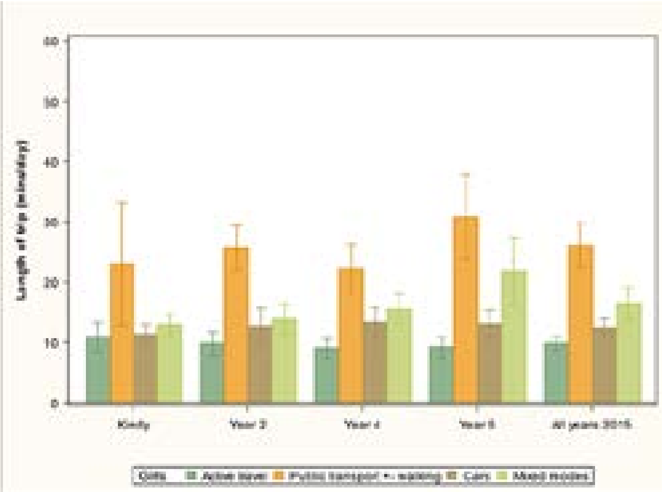
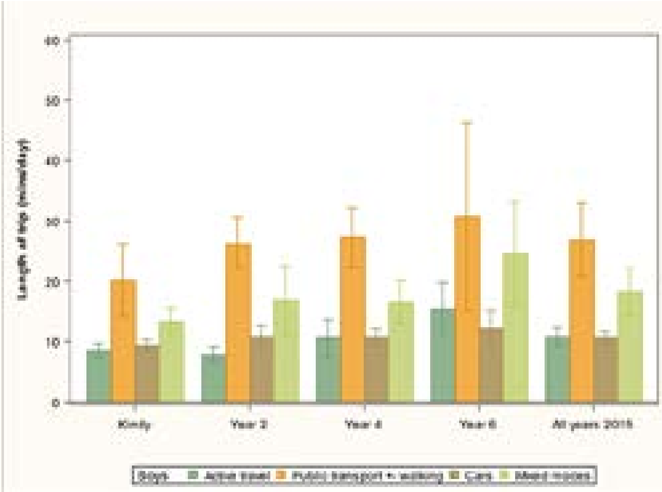


Figure 10.2 Mean length of trip to school by travel mode among children in primary school by sex and year group in 2015 (mins, 95%CI)





SOCIO-DEMOGRAPHIC DIFFERENCES

ACTIVE TRAVEL AND PUBLIC TRANSPORT

The current findings indicate that approximately one in seven (15%) children used active transport and less than one in ten (8%) used public transport to travel to school. Table 10.5 shows the prevalence of travelling to school using active travel and public transport among children in primary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of active travel to school was significantly lower among children from rural areas (9%), compared with children from urban areas (16%). The prevalence was significantly lower among girls from rural areas (6%), compared with girls from urban areas (16%); and among boys from rural areas (11%), compared with boys from urban areas (17%).

The prevalence of using public transport to travel to school was significantly higher among children from rural areas (20%), compared with children from urban areas (5%). The prevalence was significantly higher among girls from rural areas (19%), compared with girls from urban areas (6%); and among boys from rural areas (20%), compared with boys from urban areas (5%).

Change between 2010-2015: The prevalence of active travel to school significantly decreased among children from rural areas, from 16% in 2010 to 9% in 2015; and among girls from rural areas, from 17% in 2010 to 6% in 2015.

The prevalence of using public transport to travel to school significantly decreased among children from urban areas, from 10% in 2010 to 5% in 2015. The prevalence significantly decreased among girls from urban areas, from 11% in 2010 to 6% in 2015; and among boys from urban areas, from 10% in 2010 to 5% in 2015.

Socio-economic status

2015: Overall, the prevalence of active travel to school was significantly lower among children from low SES backgrounds (9%), compared with children from high SES backgrounds (17%); and among boys from low SES backgrounds (8%), compared with boys from high SES backgrounds (19%).

Overall, the prevalence of using public transport to travel to school was significantly higher among children from low SES (10%) and middle SES backgrounds (11%), compared with children from high SES backgrounds (5%). The prevalence was significantly higher among girls from middle SES backgrounds (11%), compared with girls from high SES backgrounds (5%); and among boys from low SES (10%) and middle SES backgrounds (12%), compared with boys from high SES backgrounds (4%).

Change between 2010-2015: The prevalence of active travel to school significantly decreased among children from low SES backgrounds, from 19% in 2010 to 9% in 2015. The prevalence significantly decreased among girls from low SES backgrounds, from 22% in 2010 to 11% in 2015; and among boys from low SES backgrounds, from 17% in 2010 to 8% in 2015.

The prevalence of using public transport to travel to school significantly decreased among children from urban areas, from 10% in 2010 to 5% in 2015. The prevalence significantly decreased among girls from urban areas, from 11% in 2010 to 6% in 2015; and among boys from urban areas, from 10% in 2010 to 5% in 2015.

Cultural background

2015: Overall, there were no significant differences in the prevalence of active travel to school between children from different cultural backgrounds.

Overall, there were no significant differences in the prevalence of using public transport to travel to school between children from different cultural backgrounds.

Change between 2010-2015: The prevalence of active travel to school significantly decreased among children from Middle Eastern cultural backgrounds, from 24% in 2010 to 10% in 2015; and among children from Asian cultural backgrounds, from 32% in 2010 to 20% in 2015. The prevalence significantly decreased among girls from Middle Eastern cultural backgrounds, from 25% in 2010 to 11% in 2015; and among girls from Asian cultural backgrounds, from 33% in 2010 to 18% in 2015; and among boys from Middle Eastern cultural backgrounds, from 24% in 2010 to 10% in 2015.

There were no significant changes in the prevalence of using public transport to travel to school among children from different cultural backgrounds between 2010 and 2015.

Weight status

2015: Overall, the prevalence of active travel to school was significantly lower among children in the overweight (12%) and obese (11%) BMI categories, compared with children in the healthy weight BMI category (15%). The prevalence was significantly lower among boys in the obese BMI category (10%), compared with boys in the healthy BMI category (16%).

Overall, the prevalence of using public transport to travel to school was significantly higher among girls in the overweight BMI category (11%), compared with girls in the healthy weight BMI category (8%).

Change between 2010-2015: The prevalence of active travel to school significantly decreased among children in the overweight BMI category, from 19% in 2010 to 12% in 2015; and in the obese BMI category, from 22% in 2010 to 11% in 2015. The prevalence significantly decreased among girls in the healthy weight BMI category, from 20% in 2010 to 14% in 2015, and in the overweight BMI category, from 18% in 2010 to 11% in 2015; and among boys in the obese BMI category, from 27% in 2010 to 10% in 2015.

There were no significant changes in the prevalence of using public transport to travel to school among children in different BMI categories between 2010 and 2015.

Table 10.5 Prevalence of active travel and public transport modes to school, among children in all year groups in primary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	Active travel		Public transport	
	All years 2015	All years 2010	All years 2015	All years 2010
ALL				
Locality				
Urban (ref)	16.4 (1.9)	19.8 (1.8)	5.0 (0.8)	**10.2 (1.7) b**
Rural	**8.6 (1.4) a**	**16.3 (3.0) a**	**19.6 (2.5) a**	17.4 (4.6)
SES				
Low	**9.3 (1.1) a**	**19.3 (2.9) b**	**10.2 (3.3) a**	12.9 (3.2)
Middle	14.8 (3.3)	17.1 (2.3)	**11.4 (2.0) a**	12.9 (2.4)
High (ref)	17.2 (2.5)	23.1 (3.9)	4.7 (1.2)	6.3 (1.1)
Cultural background				
English-speaking (ref)	14.6 (1.6)	17.4 (1.4)	8.5 (1.4)	11.8 (1.8)
European	16.9 (5.1)	30.0 (8.2)	10.3 (4.1)	5.8 (3.6)
Middle Eastern	10.2 (3.0)	**24.0 (5.0) b**	5.0 (1.7)	9.3 (4.3)
Asian	19.8 (4.0)	**32.0 (4.3) b**	6.3 (2.5)	5.3 (1.6)
BMI category				
Thin	18.4 (2.6)	17.4 (3.1)	7.5 (1.5)	12.1 (3.4)
Healthy weight (ref)	15.1 (1.6)	19.3 (1.6)	8.2 (1.4)	11.1 (1.6)
Overweight	**12.3 (1.6) a**	**19.4 (2.0) b**	9.7 (1.5)	12.0 (2.3)
Obese	**10.9 (2.0) a**	**21.9 (3.0) b**	7.0 (2.1)	10.0 (2.9)

	Active travel				Public transport			
	All years 2015		All years 2010		All years 2015		All years 2010	
GIRLS								
Locality								
Urban (ref)	16.1	(1.9)	19.4	(1.8)	5.5	(0.8)	**10.9**	**(1.8) b**
Rural	**6.3**	**(1.1) a**	**17.0**	**(5.9) b**	**19.3**	**(2.3) a**	15.2	(3.7)
SES								
Low	10.7	(1.8)	**21.8**	**(3.6) b**	9.9	(3.3)	12.5	(2.9)
Middle	14.3	(3.4)	15.3	(2.4)	**11.2**	**(1.8) a**	13.0	(2.7)
High (ref)	15.3	(2.5)	22.3	(3.7)	5.4	(1.3)	7.7	(1.8)
Cultural background								
English-speaking (ref)	13.8	(1.6)	17.1	(1.6)	8.8	(1.4)	12.2	(1.8)
European	19.0	(6.5)	25.1	(9.2)	6.0	(4.7)	5.4	(4.2)
Middle Eastern	10.8	(3.4)	**24.6**	**(5.4) b**	5.4	(1.4)	10.4	(4.2)
Asian	18.3	(4.6)	**32.5**	**(4.8) b**	5.4	(2.1)	4.7	(1.9)
BMI category								
Thin	19.5	(3.5)	16.3	(3.3)	7.4	(2.0)	13.0	(3.4)
Healthy weight (ref)	14.1	(1.7)	**19.8**	**(1.9) b**	8.1	(1.3)	10.9	(1.8)
Overweight	10.8	(2.0)	**18.3**	**(2.4) b**	**11.2**	**(2.2) a**	12.7	(2.5)
Obese	12.0	(2.6)	16.4	(3.3)	8.1	(2.9)	12.3	(3.4)
BOYS								
Locality								
Urban (ref)	16.8	(2.2)	20.1	(2.0)	4.5	(0.9)	**9.5**	**(1.7) b**
Rural	**10.7**	**(1.8) a**	15.9	(2.6)	**19.9**	**(3.5) a**	19.1	(6.4)
SES								
Low	**7.9**	**(1.5) a**	**16.8**	**(3.0) b**	**10.4**	**(3.5) a**	13.3	(4.1)
Middle	15.4	(3.5)	18.7	(2.5)	**11.6**	**(2.7) a**	12.8	(2.3)
High (ref)	19.3	(2.8)	23.8	(4.4)	4.0	(1.2)	5.0	(1.1)
Cultural background								
English-speaking (ref)	15.4	(1.8)	17.8	(1.7)	8.1	(1.6)	11.3	(2.0)
European	14.5	(7.8)	36.0	(15.4)	15.5	(7.2)	6.4	(6.4)
Middle Eastern	9.5	(4.6)	**23.5**	**(5.7) b**	4.5	(3.2)	8.4	(4.7)
Asian	22.0	(4.3)	31.5	(5.2)	7.8	(3.9)	5.8	(2.0)
BMI category								
Thin	16.9	(4.0)	18.6	(4.4)	7.5	(2.3)	11.2	(3.8)
Healthy weight (ref)	16.1	(1.9)	18.8	(1.8)	8.4	(1.8)	11.3	(1.8)
Overweight	14.0	(2.5)	20.6	(2.9)	8.1	(1.7)	11.3	(3.2)
Obese	**9.8**	**(2.7) a**	**27.4**	**(4.6) b**	5.9	(2.9)	7.9	(3.3)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and all year groups and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference

CAR AND MIXED MODE TRAVEL

The current findings indicate approximately one in two (54%) children were driven to school by car and one in four (23%) used mixed modes to travel to school in the mornings. Table 10.6 shows the prevalence of travelling to school by car and by mixed transport modes among children in primary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of being driven to school by car was significantly lower among children from rural areas (42%), compared with children from urban areas (57%). The prevalence was significantly lower among girls from rural areas (44%), compared with girls from urban areas (56%); and among boys from rural areas (39%), compared with boys from urban areas (57%).

The prevalence of using mixed transport modes to travel to school was significantly higher among children from rural areas (30%) compared with children from urban areas (21%), among girls from rural areas (30%) compared with girls from urban areas (22%), and, among boys from rural areas (30%) compared with boys from urban areas (22%).

Change between 2010-2015: The prevalence of being driven to school by car significantly increased among children from urban areas, from 47% in 2010 to 57% in 2015; among girls from urban areas, from 46% in 2010 to 58% in 2015; and among boys from urban areas, from 47% in 2010 to 57% in 2015.

There were no significant changes in the prevalence of using mixed transport modes to travel to school among children from rural and urban areas between 2010 and 2015.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of being driven to school by car between children from different SES backgrounds.

Overall, there were no significant differences in the prevalence of using mixed transport modes to travel to school between children from different SES backgrounds.

Change between 2010-2015: The prevalence of being driven to school by car significantly increased among children from low SES backgrounds, from 47% in 2010 to 62% in 2015; and among girls from low SES backgrounds, from 47% in 2010 to 62% in 2015.

There were no significant changes in the prevalence of using mixed transport modes to travel to school among children from different SES backgrounds between 2010 and 2015.

Cultural background

2015: Overall, the prevalence of being driven to school by car was significantly higher among children from Middle Eastern cultural backgrounds (77%), compared with children from English-speaking backgrounds (52%). The prevalence was significantly higher among girls from Middle Eastern (77%) and Asian (65%) cultural backgrounds, compared with girls from English-speaking backgrounds (53%); and among boys from Middle Eastern cultural backgrounds (77%), compared with boys from English-speaking backgrounds (52%).

Overall, the prevalence of using mixed transport modes to travel to school was significantly lower among children from Middle Eastern (8%) and Asian (13%) cultural backgrounds, compared with children from English-speaking backgrounds (25%). The prevalence was significantly lower among girls from Middle Eastern (7%) and Asian cultural backgrounds (11%), compared with girls from English-speaking backgrounds (24%); and among boys from Middle Eastern (9%) and Asian (15%) cultural backgrounds, compared with boys from English-speaking backgrounds (25%).

Change between 2010-2015: The prevalence of being driven to school by car significantly increased among children from Middle Eastern cultural backgrounds, from 50% in 2010 to 77% in 2015; and among children from Asian cultural backgrounds, from 47% in 2010 to 61% in 2015. The prevalence significantly increased among girls from Middle Eastern cultural backgrounds, from 51% in 2010 to 77% in 2015; among girls from Asian cultural backgrounds, from 47% in 2010 to 65% in 2015; and among boys from Middle Eastern cultural backgrounds, from 49% in 2010 to 77% in 2015.

The prevalence of using mixed transport modes to travel to school significantly decreased among children from Middle Eastern cultural backgrounds, from 17% in 2010 to 8% in 2015; and among girls from Middle Eastern cultural backgrounds, from 14% in 2010 to 7% in 2015.

Weight status

2015: Overall, the prevalence of being driven to school by car was significantly higher among children in the obese BMI category (62%), compared with children in the healthy weight BMI category (53%); and among boys in the obese BMI category (63%), compared with boys in the healthy BMI category (52%).

Overall, there were no significant differences in the prevalence of using mixed transport modes to travel to school between children in different BMI categories.

hange between 2010-2015: The prevalence of being driven to school by car significantly increased among children in the healthy weight BMI category, from 45% in 2010 to 53% in 2015; and in the obese BMI category, from 46% in 2010 to 62% in 2015. The prevalence significantly increased among girls in the obese BMI category, from 46% in 2010 to 61% in 2015; and among boys in the obese BMI category, from 46% in 2010 to 63% in 2015.

There were no significant changes in the prevalence of using mixed transport modes to travel to school among children in different BMI categories between 2010 and 2015.

Table 10.6 Prevalence of car and mixed transport modes to school, among children in all year groups in primary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	Car		Mixed modes	
	All years 2015	All years 2010	All years 2015	All years 2010
ALL				
Locality				
Urban (ref)	57.3 (2.8)	**46.8 (2.3) b**	21.3 (1.5)	23.2 (1.3)
Rural	**41.6 (4.5) a**	37.8 (3.7)	**30.2 (2.5) a**	28.5 (2.8)
SES				
Low	62.3 (6.7)	**46.4 (4.1) b**	18.2 (3.5)	21.4 (2.2)
Middle	48.0 (3.7)	45.1 (2.8)	25.8 (1.8)	24.9 (1.8)
High (ref)	54.5 (3.6)	45.8 (5.1)	23.6 (2.0)	24.8 (2.2)
Cultural background				
English-speaking (ref)	52.3 (2.5)	45.6 (2.2)	24.6 (1.3)	25.1 (1.3)
European	42.2 (7.3)	42.4 (8.9)	30.5 (5.7)	21.7 (6.4)
Middle Eastern	**77.0 (5.0) a**	**49.9 (5.5) b**	**7.8 (2.4) a**	**16.7 (3.5) b**
Asian	61.1 (5.7)	**46.8 (4.8) b**	**12.8 (2.7) a**	15.9 (2.3)
BMI category				
Thin	53.0 (3.5)	47.6 (4.7)	21.1 (3.3)	22.9 (2.9)
Healthy weight (ref)	53.1 (2.6)	**44.6 (2.2) b**	23.6 (1.4)	25.1 (1.4)
Overweight	53.9 (3.4)	46.1 (2.7)	24.1 (2.2)	22.5 (1.8)
Obese	**62.0 (3.6) a**	**45.8 (3.9) b**	20.0 (2.2)	22.2 (3.0)

	Car				Mixed modes			
	All years 2015		All years 2010		All years 2015		All years 2010	
GIRLS								
Locality								
Urban (ref)	57.5	(2.7)	**46.1**	**(2.4) b**	20.9	(1.6)	23.5	(1.6)
Rural	**44.3**	**(3.8) a**	40.6	(4.2)	**30.1**	**(2.2) a**	27.2	(4.3)
SES								
Low	62.0	(5.9)	**47.0**	**(4.1) b**	17.4	(3.5)	18.7	(2.3)
Middle	49.1	(3.3)	45.6	(3.0)	25.5	(2.1)	26.2	(2.3)
High (ref)	56.0	(3.7)	43.8	(5.0)	23.2	(2.3)	26.3	(2.7)
Cultural background								
English-speaking (ref)	52.9	(2.4)	**45.5**	**(2.3) b**	24.4	(1.5)	25.2	(1.6)
European	46.6	(8.1)	45.4	(11.5)	28.4	(8.1)	24.0	(7.9)
Middle Eastern	**77.0**	**(3.2) a**	**51.3**	**(5.1) b**	**6.8**	**(2.0) a**	**13.6**	**(3.0) b**
Asian	**65.1**	**(5.9) a**	**46.7**	**(4.6) b**	**11.2**	**(2.7) a**	16.1	(2.9)
BMI category								
Thin	53.5	(4.3)	45.3	(5.9)	19.6	(3.7)	25.4	(3.7)
Healthy weight (ref)	54.4	(2.5)	**44.6**	**(2.4) b**	23.4	(1.6)	24.8	(1.8)
Overweight	53.4	(3.1)	47.0	(3.2)	24.5	(2.3)	22.1	(2.7)
Obese	60.8	(5.3)	**46.0**	**(4.1) b**	19.2	(4.0)	25.4	(4.6)
BOYS								
Locality								
Urban (ref)	57.1	(3.4)	**47.4**	**(2.5) b**	21.6	(1.8)	23.0	(1.5)
Rural	**39.1**	**(5.8) a**	35.6	(3.7)	**30.3**	**(3.1) a**	29.4	(2.0)
SES								
Low	62.7	(8.0)	45.8	(4.8)	19.0	(3.7)	24.1	(2.9)
Middle	46.9	(4.6)	44.6	(2.8)	26.2	(2.3)	23.9	(2.0)
High (ref)	52.9	(4.1)	47.7	(5.5)	23.9	(2.5)	23.5	(2.5)
Cultural background								
English-speaking (ref)	51.7	(3.1)	45.8	(2.5)	24.8	(1.7)	25.1	(1.4)
European	37.1	(10.2)	38.7	(13.5)	33.0	(8.8)	18.9	(8.0)
Middle Eastern	**77.1**	**(8.3) a**	**48.8**	**(6.8) b**	**8.9**	**(3.6) a**	19.3	(6.2)
Asian	54.9	(6.5)	46.9	(5.9)	**15.3**	**(3.6) a**	15.8	(3.0)
BMI category								
Thin	52.4	(5.6)	49.9	(5.5)	23.1	(4.7)	20.3	(4.1)
Healthy weight (ref)	51.8	(3.1)	44.6	(2.4)	23.7	(1.6)	25.3	(1.4)
Overweight	54.3	(4.8)	45.1	(3.9)	23.7	(3.4)	23.0	(3.1)
Obese	**63.3**	**(5.3) a**	**45.6**	**(5.5) b**	21.0	(3.9)	19.1	(3.7)

a *Indicates statistically significant difference at $P < 0.05$. Comparisons are within each sex and all year groups and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

b *Indicates statistically significant difference at $P < 0.05$ between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

SOCIO-DEMOGRAPHIC DIFFERENCES

YEARS K & 2

Table 10.7, Table 10.8 and Figure 10.3 show the prevalence of usual travel modes to school among children in Years K and 2, respectively, by sex, socio-demographic characteristics and BMI category in 2015.

Table 10.7 Prevalence of usual travel mode to school, among children in Year K by sex, socio-demographic characteristics and BMI category in 2015 (%, SE)

	Year K							
	Active travel		Public transport		Car		Mixed modes	
ALL								
Locality								
Urban (ref)	18.3	(2.7)	2.5	(0.6)	59.6	(3.6)	19.6	(1.8)
Rural	**6.6**	**(1.4) a**	**10.8**	**(3.0) a**	60.3	(5.6)	22.3	(3.7)
SES								
Low	**8.2**	**(1.8) a**	6.1	(2.6)	**74.5**	**(4.7) a**	**11.2**	**(2.1) a**
Middle	14.4	(4.0)	**5.8**	**(1.5) a**	57.3	(5.3)	22.5	(2.8)
High (ref)	20.3	(3.7)	2.3	(0.8)	55.1	(4.8)	22.3	(2.2)
Cultural background								
English-speaking (ref)	15.9	(2.4)	4.0	(1.1)	58.8	(3.3)	21.3	(1.7)
European	6.3	(6.2)	**19.9**	**(10.4) a**	45.8	(12.5)	28.0	(11.1)
Middle Eastern	9.0	(3.4)	4.9	(4.9)	**79.8**	**(7.6) a**	**6.3**	**(3.3) a**
Asian	23.5	(5.4)	3.5	(1.8)	62.7	(6.4)	**10.4**	**(4.1) a**
BMI category								
Thin	18.4	(5.0)	4.4	(2.5)	66.5	(6.1)	**10.7**	**(3.7) a**
Healthy weight (ref)	15.8	(2.2)	4.8	(1.1)	58.7	(3.1)	20.7	(1.7)
Overweight	19.9	(4.6)	2.7	(1.3)	57.4	(5.6)	20.0	(4.3)
Obese	**4.9**	**(3.5) a**	na		**79.3**	**(6.1) a**	15.8	(4.1)
GIRLS								
Locality								
Urban (ref)	19.5	(3.3)	2.0	(0.6)	60.3	(4.1)	18.1	(2.3)
Rural	**5.3**	**(1.9) a**	**10.7**	**(3.9) a**	66.2	(6.5)	17.8	(2.7)
SES								
Low	**10.1**	**(2.3) a**	**5.7**	**(3.6) a**	**74.5**	**(5.6) a**	**9.7**	**(3.0) a**
Middle	17.5	(5.7)	**5.7**	**(1.9) a**	61.3	(5.9)	**15.6**	**(2.6) a**
High (ref)	19.0	(4.2)	1.4	(0.7)	56.0	(5.2)	23.5	(2.7)
Cultural background								
English-speaking (ref)	16.7	(2.9)	3.6	(1.3)	60.3	(3.5)	19.4	(2.1)
European	9.9	(9.5)	**21.5**	**(14.8) a**	33.7	(15.4)	34.9	(16.5)
Middle Eastern	13.9	(6.4)	na		76.0	(7.3)	10.1	(6.7)
Asian	21.0	(6.8)	3.4	(2.1)	68.9	(7.6)	**6.7**	**(3.4) a**
BMI category								
Thin	23.1	(7.5)	na		67.5	(7.6)	9.4	(5.2)
Healthy weight (ref)	17.0	(2.8)	4.5	(1.4)	59.8	(3.7)	18.7	(2.1)
Overweight	17.6	(6.1)	3.2	(1.9)	58.8	(6.8)	20.4	(5.1)
Obese	5.9	(5.6)	na		79.2	(9.3)	14.9	(6.0)

	Year K							
	Active travel		Public transport		Car		Mixed modes	
BOYS								
Locality								
Urban (ref)	17.0	(3.0)	3.0	(1.0)	59.0	(4.7)	21.0	(2.6)
Rural	**7.9**	**(1.9) a**	**10.8**	**(3.4) a**	54.7	(8.3)	26.6	(6.7)
SES								
Low	**6.5**	**(2.0) a**	6.4	(3.5)	**74.4**	**(6.4) a**	**12.7**	**(2.7) a**
Middle	10.9	(3.5)	5.8	(2.0)	52.9	(7.3)	30.4	(5.4)
High (ref)	21.6	(4.2)	3.1	(1.2)	54.2	(6.0)	21.1	(3.0)
Cultural background								
English-speaking (ref)	15.2	(2.7)	4.4	(1.3)	57.4	(4.3)	23.1	(2.7)
European	na		17.3	(12.9)	66.5	(15.7)	16.1	(15.6)
Middle Eastern	4.6	(4.6)	9.3	(9.2)	83.2	(12.8)	**2.9**	**(1.6) a**
Asian	28.5	(7.7)	3.6	(3.7)	49.8	(9.2)	18.0	(7.3)
BMI category								
Thin	13.7	(6.5)	8.7	(4.7)	65.6	(9.2)	12.0	(5.5)
Healthy weight (ref)	14.7	(2.6)	5.0	(1.3)	57.5	(4.0)	22.7	(2.7)
Overweight	23.0	(6.9)	2.0	(1.9)	55.5	(7.9)	19.5	(5.8)
Obese	3.8	(4.0)	na		**79.4**	**(8.3) a**	16.7	(7.3)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Table 10.8 Prevalence of usual travel mode to school, among children in Year 2 by sex, socio-demographic characteristics, and BMI category in 2015 (%, SE)

	Year 2							
	Active travel		Public transport		Car		Mixed modes	
ALL								
Locality								
Urban (ref)	16.2	(2.1)	4.3	(1.1)	59.7	(3.4)	19.8	(1.9)
Rural	**7.4**	**(1.3) a**	**22.1**	**(3.1) a**	**45.7**	**(4.0) a**	24.7	(2.2)
SES								
Low	**7.5**	**(1.6) a**	**11.8**	**(4.8) a**	64.9	(7.0)	15.8	(3.5)
Middle	16.2	(4.1)	**11.5**	**(2.5) a**	49.9	(4.2)	22.4	(2.2)
High (ref)	16.3	(2.6)	3.3	(1.2)	58.7	(4.1)	21.8	(2.6)
Cultural background								
English-speaking (ref)	14.3	(1.8)	7.7	(1.7)	55.7	(2.9)	22.2	(1.6)
European	16.9	(7.9)	9.7	(7.2)	43.1	(12.0)	30.3	(10.0)
Middle Eastern	10.7	(6.0)	6.7	(4.1)	**79.7**	**(4.6) a**	**2.9**	**(1.3) a**
Asian	16.8	(4.1)	9.4	(5.6)	62.6	(8.0)	**11.3**	**(3.4) a**
BMI category								
Thin	17.8	(5.7)	7.0	(3.8)	54.8	(7.0)	20.3	(5.8)
Healthy weight (ref)	14.7	(2.1)	8.4	(1.7)	56.6	(3.0)	20.3	(1.7)
Overweight	12.0	(2.5)	7.1	(2.0)	53.9	(5.3)	27.0	(4.2)
Obese	16.5	(4.9)	8.4	(4.0)	59.0	(5.5)	16.0	(3.1)

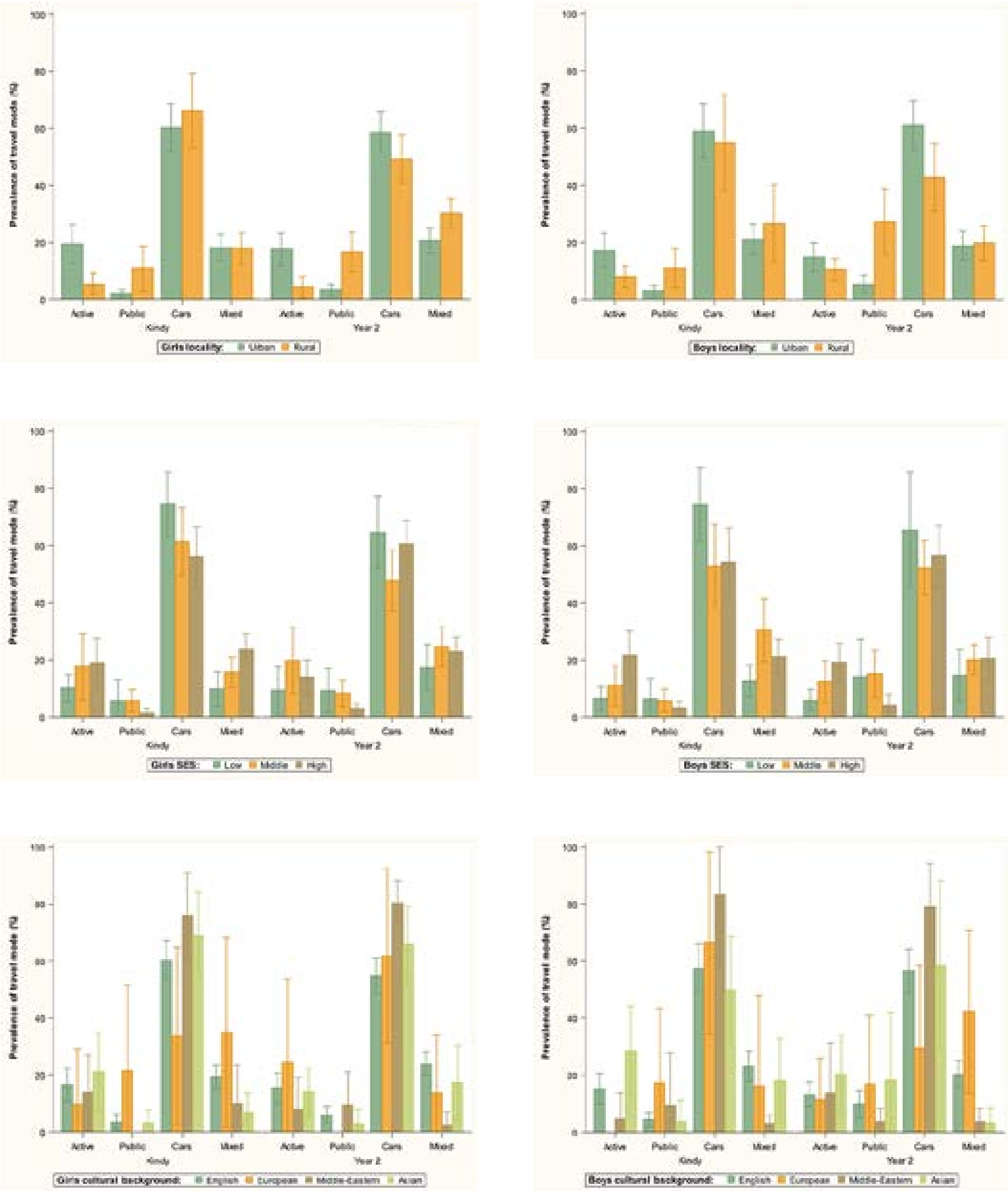
	Year 2							
	Active travel		Public transport		Car		Mixed modes	
GIRLS								
Locality								
Urban (ref)	17.5	(2.8)	3.3	(1.0)	58.6	(3.6)	20.6	(2.2)
Rural	**4.3**	**(1.8) a**	**16.5**	**(3.4) a**	49.1	(4.1)	**30.1**	**(2.6) a**
SES								
Low	9.3	(4.1)	**9.2**	**(3.8) a**	64.3	(6.2)	17.2	(4.1)
Middle	19.7	(5.7)	**8.2**	**(2.3) a**	47.7	(5.3)	24.5	(3.5)
High (ref)	13.9	(3.0)	2.8	(1.0)	60.6	(4.0)	22.8	(2.6)
Cultural background								
English-speaking (ref)	15.3	(2.6)	5.9	(1.5)	54.9	(3.1)	23.9	(2.0)
European	24.5	(14.4)	na		61.7	(15.1)	13.7	(10.0)
Middle Eastern	7.9	(5.6)	9.6	(5.6)	**80.4**	**(3.9) a**	**2.2**	**(2.4) a**
Asian	14.1	(4.1)	2.7	(2.6)	65.8	(6.6)	17.5	(6.4)
BMI category								
Thin	22.6	(8.8)	2.5	(2.5)	51.8	(9.9)	23.2	(6.7)
Healthy weight (ref)	15.9	(2.8)	5.9	(1.6)	56.7	(3.5)	21.6	(2.2)
Overweight	**7.3**	**(2.9) a**	6.5	(2.4)	56.2	(5.6)	**30.0**	**(4.1) a**
Obese	19.0	(6.3)	7.6	(4.5)	57.7	(8.1)	15.6	(6.4)
BOYS								
Locality								
Urban (ref)	14.8	(2.5)	5.4	(1.5)	61.0	(4.2)	18.8	(2.5)
Rural	10.4	(1.9)	**27.2**	**(5.7) a**	**42.6**	**(5.9) a**	19.8	(3.0)
SES								
Low	**5.9**	**(1.9) a**	**14.1**	**(6.5) a**	65.5	(10.1)	14.5	(4.4)
Middle	12.5	(3.6)	**15.1**	**(4.1) a**	52.3	(4.7)	20.1	(2.6)
High (ref)	19.2	(3.3)	3.9	(2.0)	56.4	(5.3)	20.5	(3.6)
Cultural background								
English-speaking (ref)	13.3	(2.1)	9.8	(2.4)	56.6	(3.7)	20.3	(2.3)
European	11.3	(7.1)	16.8	(11.8)	29.5	(14.3)	42.4	(14.1)
Middle Eastern	13.8	(8.6)	3.6	(2.4)	**79.1**	**(7.5) a**	**3.6**	**(2.4) a**
Asian	20.3	(6.9)	18.2	(11.8)	58.4	(14.7)	**3.1**	**(2.7) a**
BMI category								
Thin	11.8	(5.3)	12.8	(7.9)	58.8	(11.6)	16.6	(10.7)
Healthy weight (ref)	13.6	(2.3)	11.0	(2.7)	56.4	(3.7)	19.0	(2.4)
Overweight	18.3	(4.6)	7.9	(4.1)	50.7	(6.9)	23.1	(5.9)
Obese	13.8	(7.3)	9.3	(6.7)	60.5	(9.4)	16.5	(6.3)

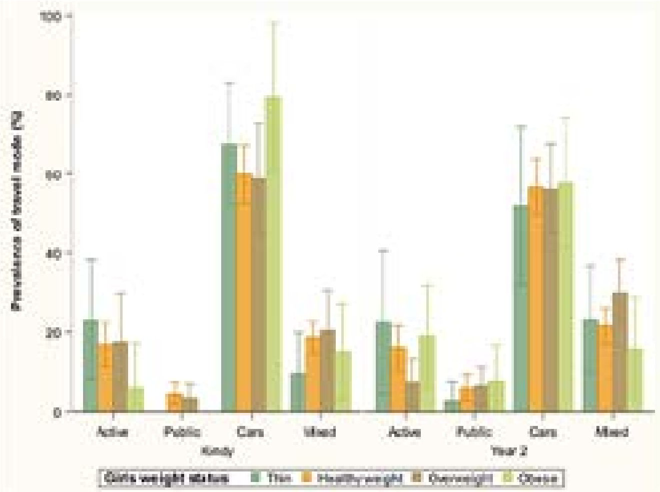
a *Indicates statistically significant difference at $P < 0.05$. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

na *Indicates statistical significance could not be calculated due to low numbers.*

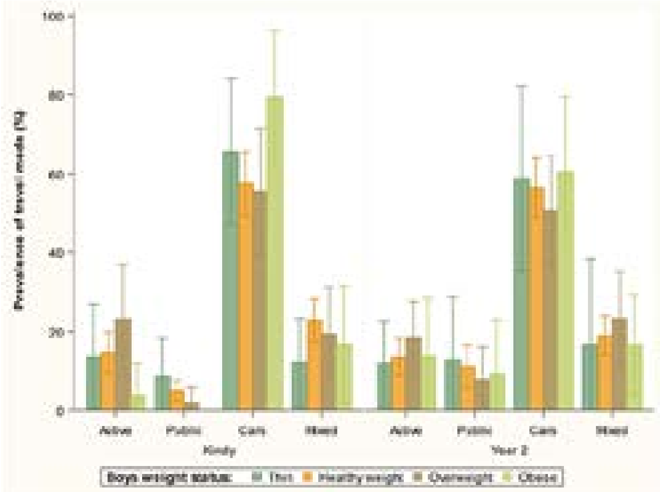
No letter means there was no statistical difference.

Figure 10.3 Prevalence of usual travel mode to school among boys and girls in Year K and Year 2 by socio-demographic characteristics and BMI category (%, 95%CI)





100
80
60
40
20
0
Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Kindy
Active
Public
Cars
Mixed
Year 2
Girls weight status
Thin
Healthy weight
Overweight
Obese



100
80
60
40
20
0
Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Kindy
Active
Public
Cars
Mixed
Year 2
Boys weight status:
Thin
Healthy weight
Overweight
Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

YEARS 4 & 6

Table 10.9, Table 10.10 and Figure 10.4 show the prevalence of usual travel modes to school among children in Years 4 and 6, respectively, by sex, socio-demographic characteristics and BMI category in 2015.

Table 10.9 Prevalence of usual travel mode to school, among children in Year 4 by sex, socio-demographic characteristics and BMI category in 2015 (%, SE)

	Year 4							
	Active travel		Public transport		Car		Mixed modes	
ALL								
Locality								
Urban (ref)	14.0	(1.7)	5.6	(1.1)	60.9	(2.9)	19.5	(1.9)
Rural	**7.1**	**(1.8) a**	**24.6**	**(3.7) a**	**33.7**	**(5.3) a**	**34.6**	**(3.3) a**
SES								
Low	**9.5**	**(1.4) a**	11.0	(4.1)	58.6	(7.9)	20.9	(4.8)
Middle	10.9	(2.8)	**15.8**	**(3.1) a**	47.1	(4.5)	26.2	(2.9)
High (ref)	15.0	(2.5)	5.2	(1.7)	58.2	(4.2)	21.6	(2.6)
Cultural background								
English-speaking (ref)	12.6	(1.5)	10.9	(2.0)	51.8	(3.2)	24.7	(1.9)
European	10.5	(7.1)	na		55.0	(13.6)	34.5	(15.6)
Middle Eastern	**4.8**	**(1.6) a**	**1.5**	**(1.1) a**	**86.5**	**(4.2) a**	**7.2**	**(3.1) a**
Asian	17.8	(5.6)	7.3	(2.7)	64.8	(6.6)	**10.2**	**(3.3) a**
BMI category								
Thin	20.9	(4.4)	**1.1**	**(1.1) a**	49.5	(5.1)	28.4	(5.3)
Healthy weight (ref)	12.5	(1.6)	11.0	(2.0)	53.5	(3.2)	23.0	(2.1)
Overweight	7.8	(2.1)	11.1	(3.1)	57.8	(5.3)	23.2	(2.9)
Obese	**7.6**	**(2.8)**	9.0	(3.3)	**65.8**	**(5.3) a**	17.6	(3.4)
GIRLS								
Locality								
Urban (ref)	12.7	(1.7)	6.6	(1.5)	61.4	(3.3)	19.3	(2.1)
Rural	**4.5**	**(1.5) a**	**28.9**	**(4.1) a**	**32.2**	**(4.9) a**	**34.4**	**(3.0) a**
SES								
Low	10.2	(2.5)	11.7	(4.0)	59.2	(6.4)	19.0	(4.0)
Middle	7.9	(2.5)	**18.8**	**(3.9) a**	**45.8**	**(5.4) a**	27.4	(3.4)
High (ref)	13.5	(2.3)	5.9	(2.2)	59.7	(5.1)	20.8	(2.9)
Cultural background								
English-speaking (ref)	10.7	(1.6)	12.7	(2.5)	51.8	(3.8)	24.8	(2.1)
European	7.2	(7.4)	na		71.9	(18.7)	20.9	(18.3)
Middle Eastern	5.6	(2.0)	**2.8**	**(1.8) a**	**83.2**	**(5.6) a**	**8.4**	**(2.8) a**
Asian	17.9	(6.2)	7.7	(3.8)	65.5	(8.1)	**8.9**	**(3.7) a**
BMI category								
Thin	16.7	(5.0)	2.2	(2.2)	52.8	(7.0)	28.2	(7.5)
Healthy weight (ref)	10.1	(1.7)	12.0	(2.4)	54.5	(4.0)	23.3	(2.6)
Overweight	8.6	(3.1)	15.8	(5.1)	51.6	(5.5)	23.9	(3.8)
Obese	5.2	(3.2)	10.6	(4.7)	**70.7**	**(6.0) a**	**13.5**	**(4.0) a**

	Year 4							
	Active travel		Public transport		Car		Mixed modes	
BOYS								
Locality								
Urban (ref)	15.5	(2.4)	4.5	(1.3)	60.4	(3.6)	19.7	(2.7)
Rural	9.6	(2.6)	**20.4**	**(4.1) a**	**35.3**	**(6.9) a**	**34.7**	**(4.1) a**
SES								
Low	8.8	(2.5)	10.4	(4.4)	58.0	(10.1)	22.9	(6.0)
Middle	14.1	(3.7)	**12.4**	**(2.9) a**	48.6	(4.7)	24.9	(3.6)
High (ref)	16.6	(3.3)	4.3	(1.9)	56.6	(5.0)	22.5	(3.8)
Cultural background								
English-speaking (ref)	14.5	(2.0)	9.1	(1.9)	51.8	(3.7)	24.7	(2.6)
European	13.8	(13.2)	na		38.1	(18.3)	48.1	(20.0)
Middle Eastern	3.8	(3.8)	na		**90.5**	**(5.7) a**	**5.8**	**(4.9) a**
Asian	17.5	(7.7)	6.7	(4.8)	63.5	(10.6)	12.3	(6.8)
BMI category								
Thin	25.3	(6.8)	na		46.1	(7.9)	28.7	(7.5)
Healthy weight (ref)	15.0	(2.2)	10.0	(2.4)	52.4	(3.8)	22.6	(2.9)
Overweight	**7.0**	**(3.0) a**	5.9	(2.7)	**64.7**	**(6.2) a**	22.5	(5.2)
Obese	10.3	(5.0)	7.2	(4.5)	60.5	(8.3)	22.0	(5.9)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Table 10.10 Prevalence of usual travel mode to school, among children in Year 6 by sex, socio-demographic characteristics and BMI category in 2015 (%, SE)

	Year 6							
	Active travel		Public transport		Car		Mixed modes	
ALL								
Locality								
Urban (ref)	16.8	(1.9)	8.1	(1.3)	48.3	(3.3)	26.7	(2.2)
Rural	12.9	(2.6)	**20.8**	**(2.8) a**	**28.1**	**(4.7) a**	**38.2**	**(4.2) a**
SES								
Low	12.0	(1.9)	12.1	(2.8)	50.3	(9.0)	25.5	(5.8)
Middle	17.4	(3.1)	12.5	(2.5)	38.5	(3.9)	31.7	(2.9)
High (ref)	16.6	(2.3)	9.3	(2.2)	44.7	(4.1)	29.4	(3.0)
Cultural background								
English-speaking (ref)	15.5	(1.5)	11.7	(1.6)	42.4	(3.0)	30.4	(2.1)
European	32.3	(14.5)	9.4	(9.1)	27.9	(10.1)	30.4	(13.0)
Middle Eastern	16.9	(5.2)	7.0	(4.6)	60.3	(11.9)	15.8	(6.8)
Asian	18.7	(5.6)	7.0	(4.1)	51.3	(11.0)	23.0	(5.4)
BMI category								
Thin	16.2	(4.7)	**17.4**	**(5.3) a**	41.4	(6.3)	25.0	(6.3)
Healthy weight (ref)	17.0	(1.7)	9.6	(1.6)	42.4	(3.1)	31.0	(2.4)
Overweight	12.1	(2.7)	**14.5**	**(2.4) a**	48.4	(4.1)	25.0	(3.1)
Obese	14.9	(3.6)	10.1	(3.9)	43.1	(8.9)	32.0	(6.1)

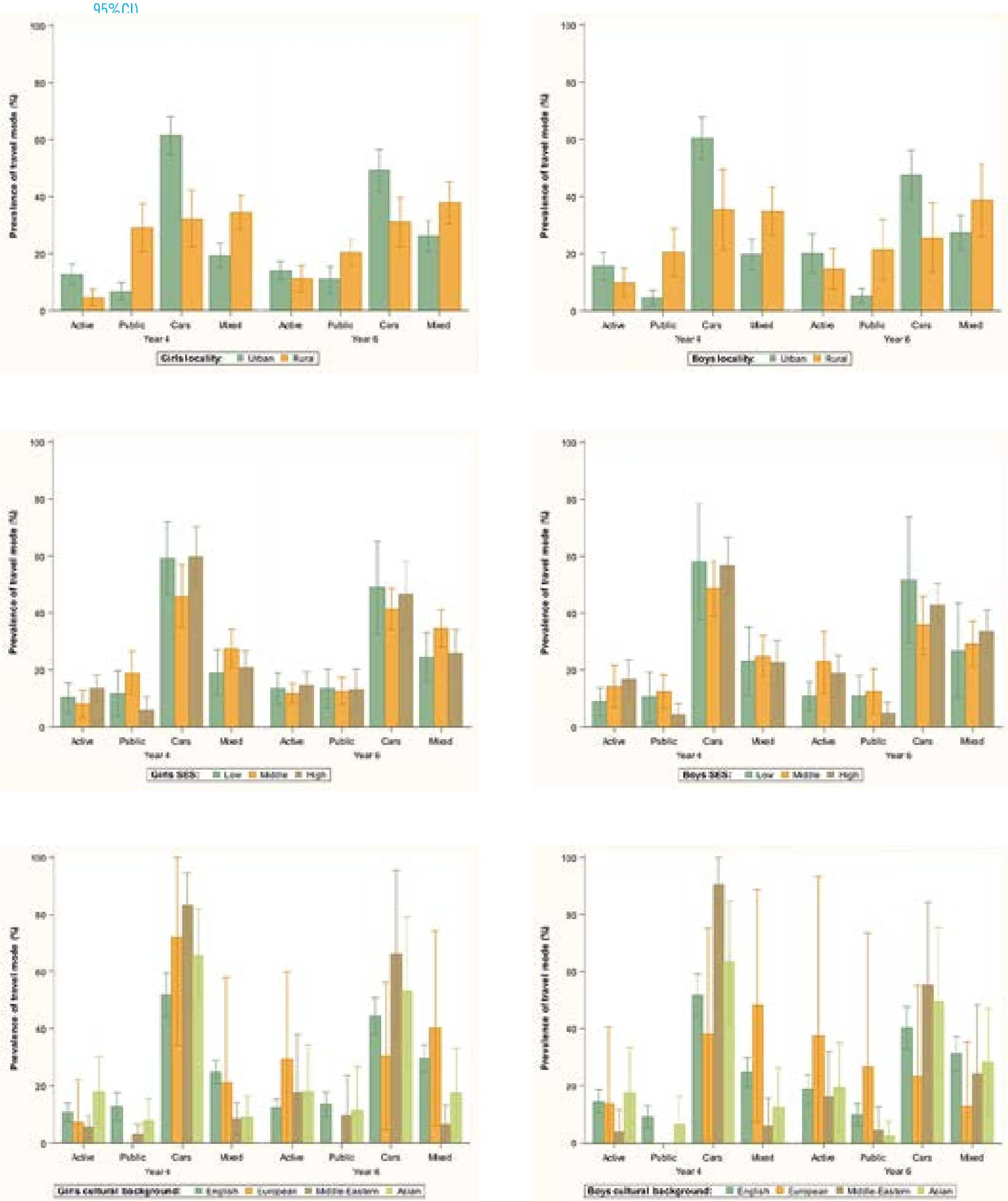
	Year 6							
	Active travel		Public transport		Car		Mixed modes	
GIRLS								
Locality								
Urban (ref)	13.9	(1.6)	10.8	(2.3)	49.2	(3.6)	26.2	(2.7)
Rural	11.1	(2.3)	**20.3**	**(2.3) a**	**30.9**	**(4.3) a**	**37.7**	**(3.7) a**
SES								
Low	13.4	(2.8)	13.4	(3.4)	48.9	(8.1)	24.3	(4.3)
Middle	11.7	(1.7)	12.5	(2.3)	41.3	(3.6)	34.5	(3.2)
High (ref)	14.5	(2.4)	13.1	(3.6)	46.5	(5.7)	25.9	(4.1)
Cultural background								
English-speaking (ref)	12.4	(1.3)	13.5	(2.2)	44.4	(3.2)	29.7	(2.2)
European	29.4	(15.0)	na		30.5	(12.7)	40.2	(16.9)
Middle Eastern	17.7	(10.0)	9.7	(6.9)	66.1	(14.5)	**6.5**	**(3.3) a**
Asian	18.0	(8.0)	11.5	(7.5)	53.0	(12.8)	17.6	(7.7)
BMI category								
Thin	16.9	(5.4)	20.5	(5.6)	44.7	(7.5)	17.9	(5.5) a
Healthy weight (ref)	12.6	(1.5)	10.8	(1.9)	45.4	(3.5)	31.1	(2.8)
Overweight	11.4	(3.8)	17.3	(4.6)	48.5	(5.9)	22.9	(4.4)
Obese	18.7	(5.5)	13.4	(5.7)	33.0	(12.6)	34.9	(8.2)
BOYS								
Locality								
Urban (ref)	20.0	(3.4)	5.2	(1.2)	47.5	(4.2)	27.3	(3.0)
Rural	14.5	(3.5)	**21.3**	**(5.3) a**	**25.5**	**(6.0) a**	38.7	(6.3)
SES								
Low	**10.7**	**(2.5) a**	10.8	(3.6)	51.7	(10.9)	26.7	(8.2)
Middle	22.8	(5.3)	12.5	(3.9)	35.7	(5.1)	29.0	(3.9)
High (ref)	18.9	(3.1)	4.9	(1.8)	42.7	(3.7)	33.5	(3.7)
Cultural background								
English-speaking (ref)	18.7	(2.5)	9.8	(2.0)	40.2	(3.6)	31.2	(3.0)
European	37.5	(27.6)	26.5	(23.2)	23.3	(15.6)	12.7	(11.3)
Middle Eastern	16.2	(7.8)	4.4	(4.0)	55.2	(14.5)	24.2	(11.9)
Asian	19.4	(7.8)	2.5	(2.5)	49.6	(12.7)	28.4	(9.2)
BMI category								
Thin	14.8	(7.6)	11.2	(6.6)	34.8	(12.3)	39.2	(12.5)
Healthy weight (ref)	21.6	(3.3)	8.4	(2.1)	39.2	(3.7)	30.8	(3.4)
Overweight	**12.6**	**(3.3) a**	12.4	(3.2)	48.3	(6.2)	26.7	(4.4)
Obese	10.9	(4.4)	6.5	(4.8)	53.7	(8.7)	28.9	(8.3)

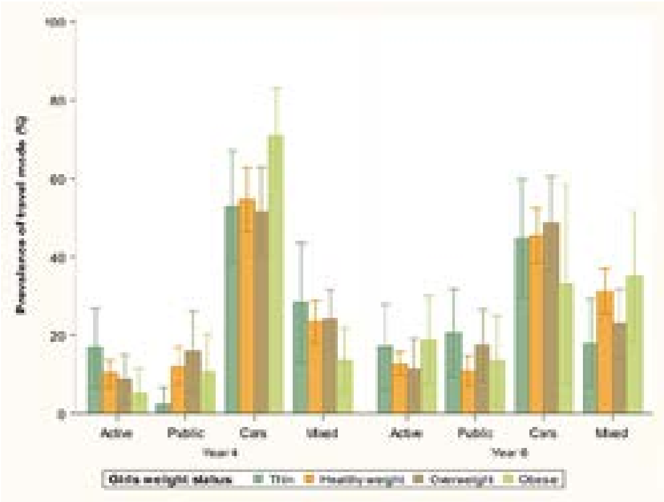
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

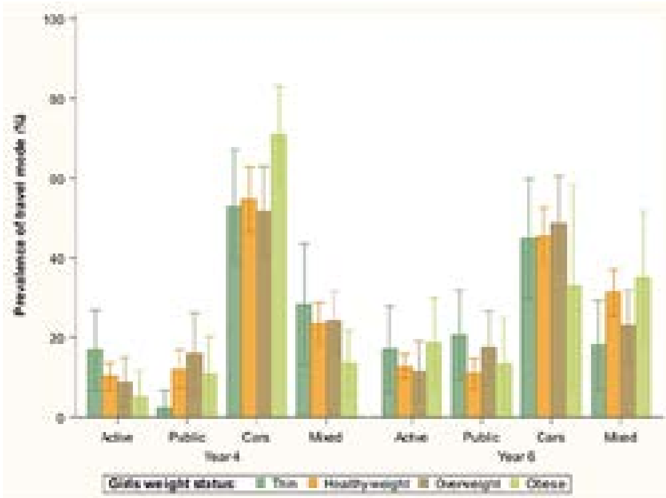
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 10.4 Prevalence of usual travel mode to school among boys and girls in Years 4 and 6 by socio-demographic characteristics and BMI category in 2015 (%, 95%CI)




Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Year 4
Year 6
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Year 4
Year 6
Girls weight status
Thin
Healthy weight
Overweight
Obese

TRAVEL HOME FROM SCHOOL

Tables 10.11, 10.12, 10.13, and 10.14 show the prevalence, mean and median trip time (minutes per day) spent in active transport, public transport, car and mixed modes of travel home from school five days a week, respectively, for 2015, and for 2010 for comparison. Figures 10.5 and 10.6 show the prevalence and the mean trip time (minutes per day) spent in each travel mode in 2015.

2015: Overall, the prevalence of children's travel modes home from school were 16% for active transport, 10% for public transport, 49% for car and 25% by mixed transport. The mean trip times were 11 minutes for active transport, 27 minutes for public transport, 12 minutes for car and 17 minutes for mixed modes. The prevalence of active travel home from school was significantly lower among girls (15%), compared with boys (18%).

Change between 2010-2015: Overall, there were no significant changes in the prevalence or mean trip duration of travelling home from school by different modes of transport between 2010 and 2015.

Table 10.11 Prevalence and trip time (minutes per day) spent travelling home from school by active transport among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Active transport			
	Boys	Girls	2015	2010
ALL YEARS 2015				
Prevalence (%, SE)	18.0 (1.9)	**14.8 (1.6) a**	16.4 (1.7)	20.4 (1.8)
Mean trip time (mins/day, SE)	11.2 (0.7)	10.4 (0.5)	10.9 (0.5)	13.4 (0.7)
Median trip time (mins/day, IQD*)	9.1 (7.7)	9.1 (8.3)	9.1 (9.0)	9.9 (9.8)
YEAR K				
Prevalence (%, SE)	16.8 (2.6)	16.4 (2.7)	16.6 (2.3)	18.6 (2.4)
Mean trip time (mins/day, SE)	9.0 (0.6)	10.8 (0.9)	9.9 (0.6)	13.5 (1.3)
Median trip time (mins/day, IQD*)	8.2 (5.7)	8.8 (9.2)	8.5 (8.8)	9.2 (9.7)
YEAR 2				
Prevalence (%, SE)	14.6 (2.2)	13.8 (2.4)	14.2 (1.8)	18.4 (2.3)
Mean trip time (mins/day, SE)	7.9 (0.6)	10.7 (1.5)	9.3 (0.8)	13.7 (1.0)
Median trip time (mins/day, IQD*)	5.0 (6.2)	9.0 (6.0)	7.0 (6.1)	9.3 (9.5)
YEAR 4				
Prevalence (%, SE)	16.5 (1.8)	**12.3 (1.5) a**	14.3 (1.5)	**19.5 (2.0) b**
Mean trip time (mins/day, SE)	11.0 (1.3)	10.0 (0.9)	10.6 (1.0)	13.2 (1.8)
Median trip time (mins/day, IQD*)	8.6 (8.5)	9.0 (8.0)	9.2 (9.4)	9.3 (9.4)
YEAR 6				
Prevalence (%, SE)	24.6 (3.2)	**16.7 (1.4) a**	20.5 (2.2)	24.9 (2.3)
Mean trip time (mins/day, SE)	15.1 (2.0)	10.1 (1.0)	13.0 (1.2)	13.3 (0.8)
Median trip time (mins/day, IQD*)	9.3 (10.3)	8.8 (7.6)	9.2 (9.4)	9.9 (13.6)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference
**IQD = inter-quartile difference.*

Table 10.12 Prevalence and trip time (minutes per day) spent travelling home from school by public transport including walking, among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Public transport							
	Boys		Girls		2015		2010	
ALL YEARS 2015								
Prevalence (%, SE)	9.9	(1.4)	10.1	(1.4)	10.0	(1.3)	12.0	(1.6)
Mean trip time (mins/day, SE)	24.8	(1.2)	28.2	(1.9)	26.6	(1.5)	30.0	(2.0)
Median trip time (mins/day, IQD*)	19.9	(15.6)	19.6	(22.9)	19.8	(18.0)	23.3	(20.5)
YEAR K								
Prevalence (%, SE)	5.4	(1.1)	4.9	(1.2)	5.2	(0.9)	7.6	(1.2)
Mean trip time (mins/day, SE)	20.8	(2.6)	22.0	(4.0)	21.4	(2.4)	24.1	(2.4)
Median trip time (mins/day, IQD*)	16.1	(18.6)	13.2	(17.3)	14.7	(17.5)	16.6	(18.9)
YEAR 2								
Prevalence (%, SE)	9.8	(1.8)	7.4	(1.5)	8.5	(1.4)	8.8	(1.4)
Mean trip time (mins/day, SE)	23.9	(2.2)	28.2	(4.3)	25.8	(2.4)	23.4	(2.1)
Median trip time (mins/day, IQD*)	17.1	(18.6)	18.7	(20.1)	18.0	(19.3)	19.5	(19.0)
YEAR 4								
Prevalence (%, SE)	11.6	(2.0)	11.4	(2.5)	11.5	(2.1)	14.8	(2.6)
Mean trip time (mins/day, SE)	25.9	(2.0)	25.9	(3.4)	25.9	(2.4)	30.3	(2.8)
Median trip time (mins/day, IQD*)	22.3	(15.4)	17.0	(19.9)	19.2	(17.0)	24.2	(20.6)
YEAR 6								
Prevalence (%, SE)	13.5	(2.0)	17.7	(2.6)	15.6	(1.9)	16.7	(2.2)
Mean trip time (mins/day, SE)	26.5	(1.5)	31.7	(3.9)	29.5	(2.6)	35.7	(3.3)
Median trip time (mins/day, IQD*)	27.3	(17.8)	20.2	(23.5)	23.8	(21.8)	28.3	(34.6)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference
**IQD = inter-quartile difference.*

Table 10.13 Prevalence and trip time (minutes per day) spent travelling home from school by car, among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Car							
	Boys		Girls		2015		2010	
ALL YEARS 2015								
Prevalence (%, SE)	47.9	(2.9)	50.1	(2.5)	49.0	(2.5)	43.8	(2.2)
Mean trip time (mins/day, SE)	10.8	(0.6)	13.0	(0.8)	12.0	(0.7)	13.1	(0.7)
Median trip time (mins/day, IQD*)	9.0	(6.3)	9.3	(10.2)	9.2	(9.9)	9.3	(9.2)
YEAR K								
Prevalence (%, SE)	57.7	(4.0)	57.3	(3.1)	57.5	(3.2)	54.2	(3.0)
Mean trip time (mins/day, SE)	9.4	(0.4)	11.8	(0.8)	10.6	(0.7)	12.4	(1.2)
Median trip time (mins/day, IQD*)	7.9	(5.4)	8.6	(8.8)	9.1	(8.5)	9.2	(7.8)
YEAR 2								
Prevalence (%, SE)	50.5	(3.4)	55.2	(2.9)	53.0	(2.6)	50.1	(3.0)
Mean trip time (mins/day, SE)	10.1	(0.6)	12.7	(1.4)	11.5	(0.9)	12.1	(0.9)
Median trip time (mins/day, IQD*)	8.2	(5.5)	8.5	(9.7)	8.4	(9.1)	9.3	(9.0)
YEAR 4								
Prevalence (%, SE)	47.7	(3.5)	51.3	(4.0)	49.5	(3.3)	41.3	(2.7)
Mean trip time (mins/day, SE)	10.1	(0.6)	12.5	(0.9)	11.4	(0.8)	14.2	(1.7)
Median trip time (mins/day, IQD*)	6.8	(8.8)	9.2	(10.0)	9.0	(9.8)	9.2	(8.8)
YEAR 6								
Prevalence (%, SE)	34.1	(3.3)	35.1	(3.0)	34.6	(2.8)	30.1	(2.5)
Mean trip time (mins/day, SE)	15.6	(2.5)	16.7	(2.0)	16.2	(1.4)	14.3	(1.2)
Median trip time (mins/day, IQD*)	9.2	(10.0)	9.8	(13.9)	9.5	(14.1)	9.5	(10.4)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference
**IQD = inter-quartile difference.*

Table 10.14 Prevalence and trip time (minutes per day) spent travelling home from school by mixed modes of transport, among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Mixed modes							
	Boys		Girls		2015		2010	
ALL YEARS 2015								
Prevalence (%, SE)	24.2	(1.7)	25.0	(1.6)	24.6	(1.5)	23.8	(1.5)
Mean trip time (mins/day, SE)	17.8	(1.4)	16.3	(1.0)	17.0	(1.1)	19.1	(1.2)
Median trip time (mins/day, IQD*)	12.3	(13.0)	10.9	(12.6)	11.8	(12.2)	12.0	(14.3)
YEAR K								
Prevalence (%, SE)	20.1	(2.7)	21.3	(1.8)	20.7	(1.8)	19.6	(1.8)
Mean trip time (mins/day, SE)	12.1	(0.9)	12.7	(1.0)	12.4	(0.8)	16.0	(2.6)
Median trip time (mins/day, IQD*)	9.9	(5.2)	9.3	(7.5)	9.8	(7.0)	9.9	(8.4)
YEAR 2								
Prevalence (%, SE)	25.2	(2.1)	23.6	(2.1)	24.3	(1.6)	22.7	(2.0)
Mean trip time (mins/day, SE)	17.4	(1.7)	14.4	(1.1)	15.9	(1.1)	17.3	(1.9)
Median trip time (mins/day, IQD*)	11.1	(16.3)	10.8	(9.3)	10.9	(12.1)	11.0	(10.8)
YEAR 4								
Prevalence (%, SE)	24.3	(2.6)	25.0	(2.7)	24.6	(2.2)	24.4	(1.9)
Mean trip time (mins/day, SE)	17.1	(1.7)	15.7	(1.2)	16.4	(1.2)	17.7	(1.5)
Median trip time (mins/day, IQD*)	12.4	(14.1)	10.8	(13.7)	11.0	(13.9)	11.6	(12.6)
YEAR 6								
Prevalence (%, SE)	27.8	(2.7)	30.6	(2.3)	29.2	(1.8)	28.3	(2.1)
Mean trip time (mins/day, SE)	23.8	(2.4)	21.3	(2.2)	22.5	(1.8)	23.7	(1.6)
Median trip time (mins/day, IQD*)	15.0	(20.2)	13.9	(17.7)	14.8	(18.4)	16.6	(17.8)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference
****IQD** = inter-quartile difference.*

Figure 10.5 Prevalence of travel mode home from school among children in primary school by sex and year group in 2015 (%, 95%CI)

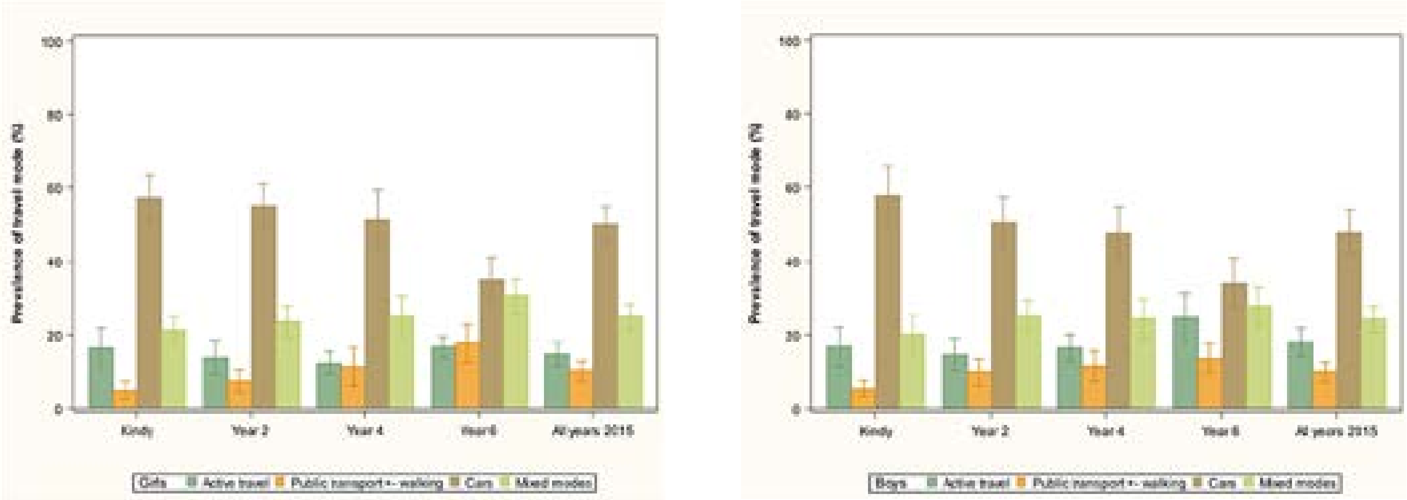
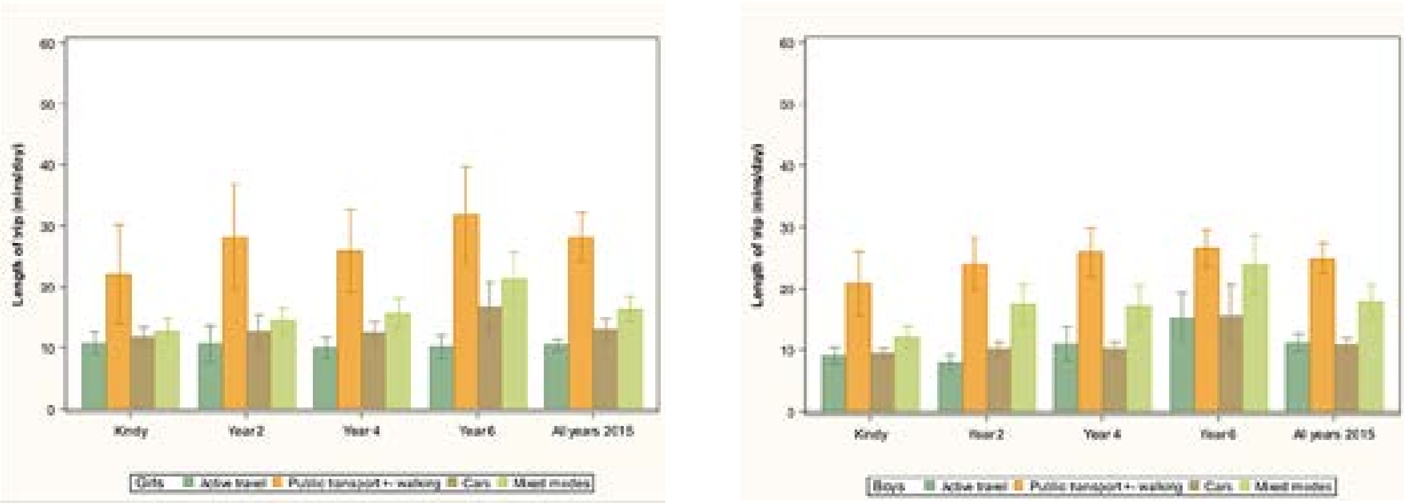


Figure 10.6 Mean length of trip home from school by travel mode among children in primary school by sex and year group in 2015 (mins, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

ACTIVE TRAVEL AND PUBLIC TRANSPORT

The current findings indicate that approximately one in six (16%) children used active transport, and one in 10 (10%) used public transport to travel home from school. Table 10.15 shows the prevalence of travelling home from school using active travel and public transport among children in primary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of active travel home from school was significantly lower among children from rural areas (9%), compared with children from urban areas (18%). The prevalence was significantly lower among girls from rural areas (6%), compared with girls from urban areas (17%); and among boys from rural areas (12%), compared with boys from urban areas (20%).

The prevalence of using public transport to travel home from school was significantly higher among children from rural areas (20%), compared with children from urban areas (7%). The prevalence was significantly higher among girls from rural areas (21%), compared with girls from urban areas (7%); and among boys from rural areas (20%), compared with boys from urban areas (7%).

Change between 2010-2015: The prevalence of active travel home from school significantly decreased among children from rural areas, from 15% in 2010 to 9% in 2015; and among girls from rural areas, from 17% in 2010 to 6% in 2015.

The prevalence of using public transport to travel home from school significantly decreased among children from urban areas, from 11% in 2010 to 7% in 2015; and among girls from urban areas, from 12% in 2010 to 7% in 2015.

Socio-economic status

2015: Overall, the prevalence of active travel home from school was significantly lower among children from low SES backgrounds (11%), compared with children from high SES backgrounds (20%); and among boys from low SES backgrounds (11%), compared with boys from high SES backgrounds (23%).

Overall, the prevalence of using public transport to travel home from school was significantly higher among children from middle SES backgrounds (12%), compared with children from high SES backgrounds (7%); and among boys from middle SES backgrounds (13%), compared with boys from high SES backgrounds (6%).

Change between 2010-2015: The prevalence of active travel home from school significantly decreased among children from low SES backgrounds, from 19% in 2010 to 11% in 2015. The prevalence significantly decreased among girls from low SES backgrounds, from 22% in 2010 to 11% in 2015; and among boys from low SES backgrounds, from 17% in 2010 to 8% in 2015.

There were no significant changes in the prevalence of using public transport to travel from school among children from different SES backgrounds between 2010 and 2015.

Cultural background

2015: Overall, the prevalence of active travel home from school was significantly higher among children from Asian cultural backgrounds (23%), compared with children from English-speaking backgrounds (16%).

Overall, the prevalence of using public transport to travel home from school was significantly lower among children from European (3%) and Middle Eastern (6%) cultural backgrounds, compared with children from English-speaking backgrounds (11%); and among girls from Middle Eastern cultural backgrounds (5%), compared with girls from English-speaking backgrounds (11%).

Change between 2010-2015: The prevalence of active travel home from school significantly decreased among children from Middle Eastern cultural backgrounds, from 28% in 2010 to 10% in 2015; and among children from Asian cultural backgrounds, from 34% in 2010 to 23% in 2015. The prevalence significantly decreased among girls from Middle Eastern cultural backgrounds, from 25% in 2010 to 10% in 2015; and among boys from Middle Eastern cultural backgrounds, from 29% in 2010 to 10% in 2015.

There were no significant changes in the prevalence of using public transport to travel home from school among children from different cultural backgrounds between 2010 and 2015.

Weight status

2015: Overall, the prevalence of active travel home from school was significantly higher among girls in the thin BMI category (22%), compared with girls in the healthy weight BMI category (14%).

Overall, the prevalence of using public transport to travel home from school was significantly higher among girls in the overweight BMI category (14%), compared with girls in the healthy weight BMI category (9%).

Change between 2010-2015: The prevalence of active travel home from school significantly decreased among children in the overweight BMI category, from 22% in 2010 to 15% in 2015, and in the obese BMI category, from 25% in 2010 to 13% in 2015. The prevalence significantly decreased among girls in the healthy weight BMI category, from 20% in 2010 to 14% in 2015, and in the overweight BMI category, from 20% in 2010 to 12% in 2015; and among boys in the obese BMI category, from 29% in 2010 to 11% in 2015.

There were no significant changes in the prevalence of using public transport to travel home from school among children in different BMI categories between 2010 and 2015.

Table 10.15 Prevalence of active travel and public transport modes home from school, among children in all year groups in primary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	Active travel		Public transport	
	All years 2015	All years 2010	All years 2015	All years 2010
ALL				
Locality				
Urban (ref)	18.4 (1.9)	21.2 (1.9)	7.1 (1.1)	**11.4 (1.8) b**
Rural	**9.1 (1.4) a**	**14.9 (3.2) b**	**20.2 (2.1) a**	**16.2 (3.7)**
SES				
Low	**11.0 (1.2) a**	**19.9 (2.8) b**	12.5 (3.5)	12.8 (3.3)
Middle	15.0 (3.6)	17.8 (2.4)	**12.4 (1.9) a**	14.6 (2.3)
High (ref)	20.0 (2.5)	25.0 (4.0)	6.9 (1.5)	7.2 (1.1)
Cultural background				
English-speaking (ref)	16.3 (1.6)	18.5 (1.5)	10.5 (1.4)	12.9 (1.8)
European	17.9 (6.2)	27.9 (8.7)	**3.0 (1.8) a**	6.9 (3.7)
Middle Eastern	9.6 (2.9)	**27.5 (7.0) b**	**5.5 (1.8) a**	8.9 (4.6)
Asian	**22.6 (3.3) a**	**33.6 (4.0) b**	8.8 (3.7)	6.4 (2.0)
BMI category				
Thin	**23.2 (2.5) a**	18.3 (3.1)	9.7 (2.0)	12.2 (3.1)
Healthy weight (ref)	16.1 (1.7)	19.9 (1.6)	9.6 (1.4)	12.5 (1.7)
Overweight	14.9 (1.7)	**22.0 (2.3) b**	12.1 (1.7)	11.7 (1.9)
Obese	13.2 (2.3)	**24.6 (3.5) b**	10.0 (2.7)	10.6 (2.9)
GIRLS				
Locality				
Urban (ref)	17.1 (2.0)	20.5 (1.9)	7.3 (1.2)	**12.2 (2.0) b**
Rural	**6.3 (1.1) a**	**16.5 (4.8) b**	**20.8 (2.5) a**	15.8 (4.3)
SES				
Low	11.3 (1.8)	**22.3 (2.9) b**	13.0 (3.6)	13.5 (3.7)
Middle	13.6 (3.7)	16.2 (2.6)	11.9 (2.2)	14.5 (2.7)
High (ref)	17.3 (2.5)	23.6 (3.6)	7.5 (1.7)	8.7 (1.5)
Cultural background				
English-speaking (ref)	14.3 (1.7)	18.1 (1.6)	10.9 (1.5)	13.7 (2.0)
European	19.1 (6.5)	28.7 (12.8)	5.6 (3.3)	7.3 (4.7)
Middle Eastern	9.7 (3.1)	**25.4 (7.0) b**	**4.9 (1.6) a**	**9.6 (4.2)**
Asian	**22.7 (4.5) a**	34.1 (4.2)	5.6 (2.7)	4.3 (2.0)
BMI category				
Thin	**21.7 (3.2) a**	18.8 (4.1)	10.8 (2.7)	13.3 (3.6)
Healthy weight (ref)	14.4 (1.7)	**20.4 (1.9) b**	9.1 (1.4)	12.7 (2.0)
Overweight	12.4 (2.2)	**19.5 (2.3) b**	**14.2 (2.6) a**	13.2 (2.1)
Obese	15.3 (3.2)	20.3 (3.6)	12.0 (3.4)	12.2 (3.4)

	Active travel				Public transport			
	All years 2015		All years 2010		All years 2015		All years 2010	
BOYS								
Locality								
Urban (ref)	19.8	(2.4)	21.8	(2.0)	7.0	(1.2)	10.7	(1.7)
Rural	**11.8**	**(1.9) a**	13.7	(3.8)	**19.7**	**(2.2) a**	16.5	(3.8)
SES								
Low	**10.7**	**(1.8) a**	**17.5**	**(3.5) b**	12.0	(3.6)	12.0	(3.1)
Middle	16.5	(3.8)	19.3	(2.4)	**13.0**	**(1.9) a**	14.6	(2.2)
High (ref)	23.0	(3.0)	26.2	(4.6)	6.3	(1.6)	5.9	(1.1)
Cultural background								
English-speaking (ref)	18.3	(2.0)	18.8	(1.8)	10.1	(1.4)	12.1	(1.8)
European	16.4	(7.9)	26.8	(11.4)	na		6.4	(6.4)
Middle Eastern	9.5	(4.1)	**29.4**	**(7.9) b**	6.1	(3.2)	8.2	(5.2)
Asian	22.5	(4.0)	33.1	(4.8)	13.6	(6.0)	8.4	(3.2)
BMI category								
Thin	25.0	(4.6)	17.8	(4.1)	8.4	(2.7)	11.0	(3.7)
Healthy weight (ref)	17.9	(2.1)	19.5	(1.9)	10.2	(1.6)	12.3	(1.6)
Overweight	17.6	(2.6)	24.4	(3.4)	9.8	(1.9)	10.1	(2.2)
Obese	11.0	(2.9)	**28.7**	**(4.6) b**	7.9	(3.0)	9.0	(3.7)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and all year groups and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

CAR AND MIXED MODE TRAVEL

The current findings indicate that approximately one in two (49%) children were driven home from school by car and one in four (25%) children used mixed modes to travel home from school in the afternoon. Table 10.16 shows the prevalence of travelling home from school by car and by mixed transport modes among children in primary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of being driven home from school by car was significantly lower among children from rural areas (38%), compared with children from urban areas (52%). The prevalence was significantly lower among girls from rural areas (40%), compared with girls from urban areas (53%); and among boys from rural areas (35%), compared with boys from urban areas (52%).

The prevalence of using mixed transport modes to travel from school was significantly higher among children from rural areas (33%), compared with children from urban areas (22%); among girls from rural areas (33%), compared with girls from urban areas (23%); and among boys from rural areas (33%), compared with boys from urban areas (21%).

Change between 2010-2015: The prevalence of being driven home from school by car significantly increased among children from urban areas, from 45% in 2010 to 52% in 2015; and among girls from urban areas from 44% in 2010 to 53% in 2015.

There were no significant changes in the prevalence of using mixed transport modes to travel home from school among children from rural and urban areas between 2010 and 2015.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of being driven home from school by car between children from different SES backgrounds.

Overall, the prevalence of using mixed transport modes to travel home from school was significantly higher among children from middle SES backgrounds (31%), compared with children from high SES backgrounds (23%); and among boys from middle SES backgrounds (31%), compared with boys from high SES backgrounds (22%).

Change between 2010-2015: The prevalence of being driven from home from school by car significantly increased among girls from low SES backgrounds, from 45% in 2010 to 58% in 2015.

The prevalence of using mixed transport modes to travel from school significantly increased among boys from middle SES backgrounds, from 24% in 2010 to 31% in 2015.

Cultural background

2015: Overall, the prevalence of being driven home from school by car was significantly higher among children from Middle Eastern cultural backgrounds (78%), compared with children from English-speaking backgrounds (47%). The prevalence was significantly higher among girls from Middle Eastern cultural backgrounds (78%), compared with girls from English-speaking backgrounds (48%); and among boys from Middle Eastern cultural backgrounds (77%), compared with boys from English-speaking backgrounds (47%).

Overall, the prevalence of using mixed transport modes to travel home from school was significantly lower among children from Middle Eastern (7%) and Asian (16%) cultural backgrounds, compared with children from English-speaking backgrounds (26%). The prevalence was significantly lower among girls from Middle Eastern (7%) and Asian (16%) cultural backgrounds, compared with girls from English-speaking backgrounds (27%); and among boys from Middle Eastern cultural backgrounds (46%), compared with boys from English-speaking backgrounds (25%). The prevalence was significantly higher among boys from European cultural backgrounds (46%), compared with boys from English-speaking backgrounds (25%).

Change between 2010-2015: The prevalence of being driven home from school by car significantly increased among children from Middle Eastern cultural backgrounds, from 50% in 2010 to 78% in 2015. The prevalence significantly increased among girls from Middle Eastern cultural backgrounds, from 52% in 2010 to 78% in 2015; and among boys from Middle Eastern cultural backgrounds, from 48% in 2010 to 77% in 2015.

The prevalence of using mixed transport modes to travel home from school significantly decreased among girls from Middle Eastern cultural backgrounds, from 13% in 2010 to 7% in 2015.

Weight status

2015: Overall, the prevalence of being driven home from school by car was significantly higher among children in the obese BMI category (57%), compared with children in the healthy weight BMI category (49%); and among boys in the obese BMI category (60%), compared with boys in the healthy BMI category (47%).

Overall, the prevalence of using mixed transport modes to travel home from school was significantly lower among children in the obese BMI category (20%), compared with boys in the healthy BMI category (25%).

Change between 2010-2015: The prevalence of being driven home from school by car significantly increased among children in the obese BMI category, from 44% in 2010 to 57% in 2015. The prevalence significantly increased among girls in the healthy weight BMI category, from 41% in 2010 to 51% in 2015; and among boys in the obese BMI category, from 43% in 2010 to 60% in 2015.

There were no significant changes in the prevalence of using mixed transport modes to travel from school among children in different BMI categories between 2010 and 2015.

Table 10.16 Prevalence of car and mixed transport modes to travel home from school, among children in all year groups in primary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	Car				Mixed modes			
	All years 2015		All years 2010		All years 2015		All years 2010	
ALL								
Locality								
Urban (ref)	52.2	(2.7)	**44.5**	**(2.3) b**	22.2	(1.5)	22.9	(1.5)
Rural	**37.5**	**(3.7) a**	38.3	(2.9)	**33.1**	**(2.3) a**	30.6	(3.1)
SES								
Low	58.5	(6.5)	46.0	(3.7)	18.0	(3.3)	21.3	(2.7)
Middle	42.1	(3.2)	42.2	(2.6)	**30.5**	**(2.0) a**	25.4	(1.9)
High (ref)	50.1	(3.2)	44.0	(5.0)	23.0	(1.7)	23.8	(2.6)
Cultural background								
English-speaking (ref)	47.4	(2.3)	43.4	(2.1)	25.8	(1.4)	25.3	(1.4)
European	44.9	(7.2)	44.2	(8.0)	34.2	(5.8)	21.0	(8.4)
Middle Eastern	**77.6**	**(4.8) a**	**50.0**	**(7.7) b**	**7.2**	**(2.1) a**	13.6	(3.4)
Asian	52.7	(6.5)	46.3	(4.1)	**15.9**	**(2.4) a**	13.7	(2.6)
BMI category								
Thin	44.5	(3.1)	45.3	(4.1)	22.6	(2.8)	24.2	(2.7)
Healthy weight (ref)	48.8	(2.4)	42.2	(2.1)	25.4	(1.6)	25.3	(1.6)
Overweight	48.4	(3.4)	46.1	(2.7)	24.6	(2.4)	20.2	(2.3)
Obese	**56.9**	**(4.1) a**	**44.3**	**(4.2) b**	**19.9**	**(2.3) a**	20.6	(3.2)
GIRLS								
Locality								
Urban (ref)	52.7	(2.9)	**44.0**	**(2.4) b**	22.9	(1.8)	23.3	(1.7)
Rural	**40.1**	**(3.2) a**	36.8	(4.5)	**32.8**	**(1.8) a**	30.9	(4.9)
SES								
Low	58.4	(6.0)	**44.7**	**(3.8) b**	17.2	(3.7)	19.5	(2.9)
Middle	44.4	(3.9)	42.7	(2.7)	30.1	(2.6)	26.6	(2.3)
High (ref)	50.8	(3.6)	42.2	(5.0)	24.4	(2.2)	25.5	(3.1)
Cultural background								
English-speaking (ref)	48.3	(2.4)	42.4	(2.2)	26.5	(1.6)	25.8	(1.7)
European	50.7	(8.2)	51.7	(11.8)	24.5	(7.0)	12.2	(7.0)
Middle Eastern	**78.3**	**(3.1) a**	**52.0**	**(6.8) b**	**7.1**	**(1.4) a**	**13.0**	**(3.0) b**
Asian	56.1	(6.9)	48.1	(4.0)	**15.6**	**(3.1) a**	13.4	(3.5)
BMI category								
Thin	46.5	(4.0)	42.8	(6.0)	21.0	(3.1)	25.2	(3.5)
Healthy weight (ref)	50.6	(2.6)	**41.1**	**(2.3) b**	26.0	(1.9)	25.8	(2.1)
Overweight	48.1	(3.6)	47.8	(3.2)	25.2	(3.3)	19.5	(2.4)
Obese	54.5	(4.7)	45.4	(4.4)	18.2	(3.6)	22.1	(4.6)

	Car				Mixed modes			
	All years 2015		All years 2010		All years 2015		All years 2010	
BOYS								
Locality								
Urban (ref)	51.7	(3.2)	45.1	(2.4)	21.4	(1.8)	22.4	(1.6)
Rural	**35.1**	**(4.7) a**	39.5	(2.5)	**33.4**	**(3.0) a**	30.4	(2.5)
SES								
Low	58.5	(7.6)	47.3	(4.2)	18.8	(3.3)	23.1	(3.1)
Middle	39.6	(3.5)	41.7	(2.6)	**30.9**	**(2.5) a**	**24.4**	**(2.1) b**
High (ref)	49.2	(3.8)	45.6	(5.1)	21.6	(2.0)	22.3	(2.4)
Cultural background								
English-speaking (ref)	46.5	(2.8)	44.3	(2.2)	25.1	(1.7)	24.7	(1.5)
European	38.0	(11.9)	34.9	(12.2)	**45.5**	**(11.6) a**	31.8	(13.8)
Middle Eastern	**77.0**	**(8.0) a**	**48.4**	**(9.1) b**	**7.3**	**(3.5) a**	14.1	(5.1)
Asian	47.5	(8.1)	44.6	(5.3)	16.5	(4.3)	13.9	(2.3)
BMI category								
Thin	41.9	(4.7)	48.0	(5.0)	24.7	(3.8)	23.2	(4.2)
Healthy weight (ref)	47.1	(2.9)	43.2	(2.2)	24.8	(1.9)	24.9	(1.6)
Overweight	48.7	(4.3)	44.6	(3.5)	23.8	(2.7)	20.9	(3.5)
Obese	**59.5**	**(6.1) a**	**43.2**	**(4.7) b**	21.6	(3.6)	19.1	(3.9)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and all year groups and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

SOCIO-DEMOGRAPHIC DIFFERENCES

YEARS K & 2

Table 10.17, Table 10.18 and Figure 10.7 show the prevalence of usual travel modes home from school among children in Years K and 2, respectively, by sex, socio-demographic characteristics and BMI category in 2015.

Table 10.17 Prevalence of usual travel mode home from school, among children in Year K by sex, socio-demographic characteristics and BMI category in 2015 (%, SE)

	Year K							
	Active travel		Public transport		Car		Mixed modes	
ALL								
Locality								
Urban (ref)	19.1	(2.6)	3.6	(0.7)	57.0	(3.6)	20.3	(1.9)
Rural	**6.5**	**(1.3) a**	**11.6**	**(2.5) a**	59.7	(5.9)	22.2	(4.0)
SES								
Low	**9.5**	**(1.8) a**	**8.0**	**(2.5) a**	**70.4**	**(4.7) a**	**12.2**	**(2.5) a**
Middle	14.5	(4.9)	6.0	(1.5)	55.4	(5.0)	24.1	(3.0)
High (ref)	21.2	(3.3)	3.4	(0.8)	53.3	(4.8)	22.2	(2.4)
Cultural background								
English-speaking (ref)	16.2	(2.4)	5.2	(1.0)	56.6	(3.2)	22.0	(1.8)
European	16.1	(11.1)	3.7	(3.8)	52.2	(13.0)	28.0	(11.1)
Middle Eastern	8.9	(3.4)	6.4	(4.4)	**80.1**	**(7.6) a**	**4.7**	**(3.7) a**
Asian	**25.6**	**(4.6) a**	5.2	(2.5)	57.5	(6.2)	11.7	(4.4)
BMI category								
Thin	16.0	(5.0)	4.3	(2.4)	62.6	(6.2)	17.1	(4.0)
Healthy weight (ref)	16.4	(2.3)	5.0	(1.0)	57.3	(3.0)	21.4	(1.8)
Overweight	20.8	(4.5)	6.8	(2.6)	53.8	(5.9)	18.7	(3.9)
Obese	6.3	(3.7)	2.8	(2.0)	70.5	(7.6)	20.4	(5.9)
GIRLS								
Locality								
Urban (ref)	19.2	(3.2)	3.4	(0.9)	55.8	(3.8)	21.7	(2.3)
Rural	**5.3**	**(1.9) a**	**11.3**	**(4.1) a**	63.6	(6.5)	19.8	(2.5)
SES								
Low	11.0	(2.0)	8.4	(3.8)	**68.0**	**(5.7) a**	**12.6**	**(3.6) a**
Middle	17.4	(6.4)	4.6	(1.9)	58.9	(5.6)	19.2	(2.6)
High (ref)	18.2	(3.6)	3.6	(1.2)	51.6	(4.7)	26.6	(2.7)
Cultural background								
English-speaking (ref)	15.3	(2.7)	5.2	(1.4)	56.5	(3.2)	23.0	(2.1)
European	25.5	(15.8)	5.9	(6.0)	33.7	(15.4)	34.9	(16.5)
Middle Eastern	13.9	(6.4)	na		**76.0**	**(7.3) a**	10.1	(6.7)
Asian	24.2	(6.1)	4.6	(3.2)	61.0	(8.0)	**10.2**	**(4.5) a**
BMI category								
Thin	20.4	(7.5)	2.5	(2.5)	62.5	(7.7)	14.6	(5.9)
Healthy weight (ref)	16.3	(2.7)	4.1	(1.4)	57.9	(3.4)	21.7	(2.1)
Overweight	19.7	(6.3)	9.1	(4.1)	50.7	(6.9)	20.5	(5.1)
Obese	8.8	(6.2)	5.5	(3.9)	61.7	(10.7)	**24.0**	**(9.0)**

	Year K							
	Active travel		Public transport		Car		Mixed modes	
BOYS								
Locality								
Urban (ref)	19.1	(3.1)	3.8	(1.0)	58.2	(4.6)	19.0	(3.0)
Rural	**7.7**	**(2.0) a**	**11.8**	**(3.0) a**	55.9	(8.6)	24.5	(6.7)
SES								
Low	**8.0**	**(2.9) a**	7.5	(3.0)	**72.8**	**(6.2) a**	11.8	(3.3)
Middle	**11.2**	**(4.1) a**	7.7	(2.3)	51.5	(7.0)	29.6	(5.8)
High (ref)	24.0	(4.2)	3.2	(1.2)	54.9	(6.3)	17.9	(3.3)
Cultural background								
English-speaking (ref)	17.0	(2.9)	5.2	(1.2)	56.7	(4.3)	21.1	(2.9)
European	na		na		83.9	(15.6)	16.1	(15.6)
Middle Eastern	4.5	(4.5)	11.9	(8.1)	83.6	(12.6)	na	
Asian	28.5	(7.7)	6.3	(4.6)	50.4	(9.7)	14.8	(6.8)
BMI category								
Thin	11.5	(6.7)	6.1	(4.1)	62.8	(9.3)	19.6	(6.8)
Healthy weight (ref)	16.5	(2.8)	5.8	(1.3)	56.7	(4.1)	21.1	(2.9)
Overweight	22.2	(6.4)	3.6	(2.5)	58.0	(8.1)	16.2	(6.1)
Obese	3.8	(3.9)	na		79.6	(9.8)	16.6	(9.0)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Table 10.18 Prevalence of usual travel mode home from school, among children in Year 2 by sex, socio-demographic characteristics and BMI category in 2015 (%, SE)

	Year 2							
	Active travel		Public transport		Car		Mixed modes	
ALL								
Locality								
Urban (ref)	16.1	(2.1)	5.7	(1.3)	55.9	(2.9)	22.3	(1.6)
Rural	**6.5**	**(1.4) a**	**19.5**	**(2.0) a**	**41.4**	**(4.1) a**	**32.5**	**(3.2) a**
SES								
Low	**7.9**	**(1.5) a**	11.4	(4.0)	61.5	(7.0)	19.2	(4.5)
Middle	13.5	(3.7)	**11.5**	**(2.4) a**	46.1	(3.2)	**28.9**	**(1.9) a**
High (ref)	17.5	(3.0)	4.9	(1.4)	54.5	(3.8)	23.1	(1.9)
Cultural background								
English-speaking (ref)	14.2	(1.9)	8.6	(1.6)	51.5	(2.5)	25.6	(1.6)
European	10.3	(5.4)	2.2	(2.2)	49.1	(10.9)	38.4	(10.2)
Middle Eastern	10.8	(6.1)	6.8	(4.1)	**76.4**	**(5.5) a**	**6.0**	**(2.2) a**
Asian	15.9	(2.9)	9.3	(5.6)	58.0	(9.1)	**16.8**	**(3.8) a**
BMI category								
Thin	23.1	(6.8)	6.3	(4.2)	43.5	(6.4)	27.1	(5.7)
Healthy weight (ref)	13.9	(2.1)	9.0	(1.5)	53.2	(2.8)	23.9	(1.8)
Overweight	10.8	(2.4)	7.4	(2.3)	51.8	(4.9)	30.0	(4.1)
Obese	18.1	(5.4)	8.7	(4.1)	58.2	(5.4)	**15.0**	**(3.0) a**
GIRLS								
Locality								
Urban (ref)	16.3	(2.8)	5.5	(1.5)	56.8	(3.4)	21.4	(2.2)
Rural	**2.9**	**(1.7) a**	**15.4**	**(2.7) a**	48.4	(3.0)	**33.3**	**(2.6) a**
SES								
Low	9.4	(4.0)	10.6	(3.4)	60.8	(5.2)	19.2	(3.6)
Middle	16.1	(5.2)	9.4	(2.4)	48.7	(4.7)	25.8	(2.6)
High (ref)	13.9	(3.5)	4.7	(1.6)	57.7	(4.6)	23.7	(3.3)
Cultural background								
English-speaking (ref)	14.2	(2.7)	7.6	(1.6)	53.4	(3.1)	24.8	(2.2)
European	9.0	(8.0)	5.1	(5.2)	77.3	(11.4)	8.7	(8.6)
Middle Eastern	8.0	(5.8)	9.8	(5.7)	**76.7**	**(4.6) a**	**5.5**	**(2.5) a**
Asian	14.8	(3.8)	2.6	(2.5)	59.0	(7.7)	23.6	(7.7)
BMI category								
Thin	23.3	(8.9)	4.2	(3.0)	42.7	(8.4)	29.7	(7.2)
Healthy weight (ref)	13.9	(2.8)	7.6	(1.7)	56.1	(3.3)	22.4	(2.5)
Overweight	6.5	(3.0)	7.9	(2.7)	58.2	(6.2)	27.4	(5.0)
Obese	21.9	(6.6)	6.0	(4.4)	53.7	(9.3)	**18.4**	**(6.8)**

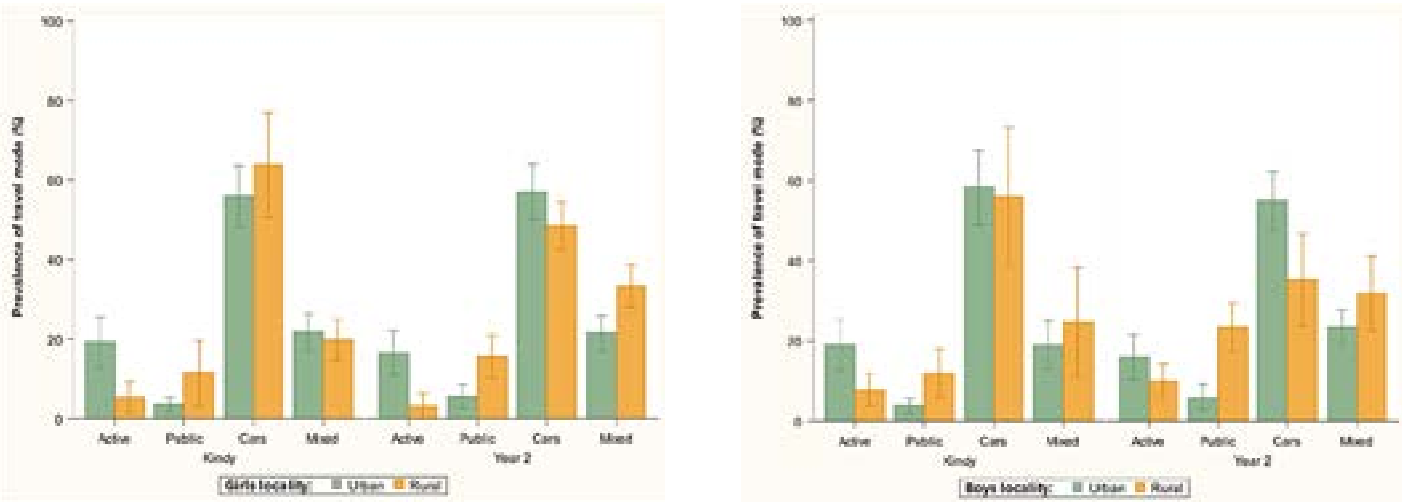
	Year 2							
	Active travel		Public transport		Car		Mixed modes	
BOYS								
Locality								
Urban (ref)	15.9	(2.8)	5.9	(1.6)	54.9	(3.6)	23.3	(2.2)
Rural	9.8	(2.2)	**23.3**	**(2.9) a**	**35.1**	**(5.7) a**	31.8	(4.6)
SES								
Low	**6.7**	**(2.3) a**	12.0	(5.3)	62.0	(10.9)	19.2	(5.8)
Middle	**10.9**	**(3.5) a**	**13.8**	**(3.0) a**	43.3	(3.2)	**32.0**	**(3.4) a**
High (ref)	21.8	(3.7)	5.2	(2.0)	50.5	(3.9)	22.5	(1.8)
Cultural background								
English-speaking (ref)	14.3	(2.3)	9.8	(1.9)	49.4	(3.4)	26.5	(2.3)
European	11.3	(7.1)	na		28.5	(14.1)	**60.2**	**(13.4) a**
Middle Eastern	13.8	(8.6)	3.6	(2.4)	**76.2**	**(9.1) a**	**6.5**	**(3.2) a**
Asian	17.4	(6.4)	18.3	(11.7)	56.7	(15.1)	**7.6**	**(4.4) a**
BMI category								
Thin	22.9	(10.7)	8.8	(6.6)	44.5	(11.0)	23.9	(9.3)
Healthy weight (ref)	13.9	(2.4)	10.5	(2.2)	50.1	(3.4)	25.5	(2.6)
Overweight	16.5	(4.5)	6.6	(4.1)	43.3	(6.3)	33.6	(6.2)
Obese	14.0	(7.4)	11.7	(7.2)	63.1	(11.2)	**11.2**	**(4.8) a**

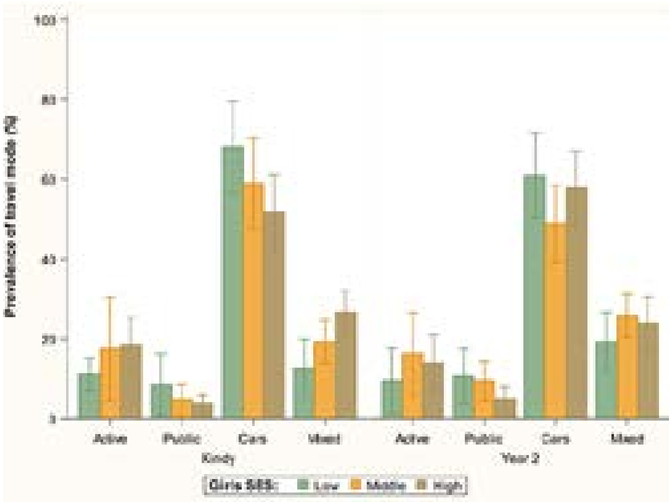
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

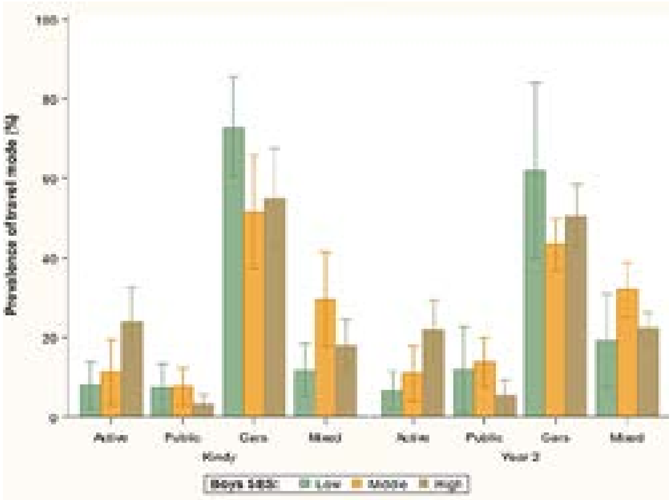
na *Indicates statistical significance could not be calculated due to low numbers.*

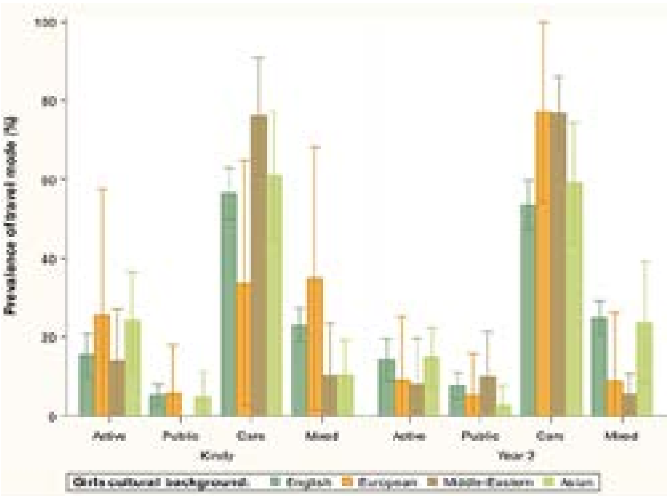
No letter means there was no statistical difference.

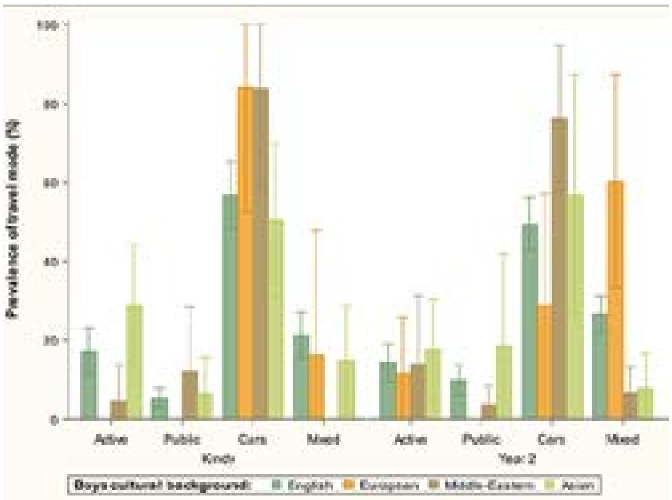
Figure 10.7 Prevalence of usual travel mode home from school, among boys and girls in Years K and 2 by socio-demographic characteristics and BMI category (%, 95%CI)

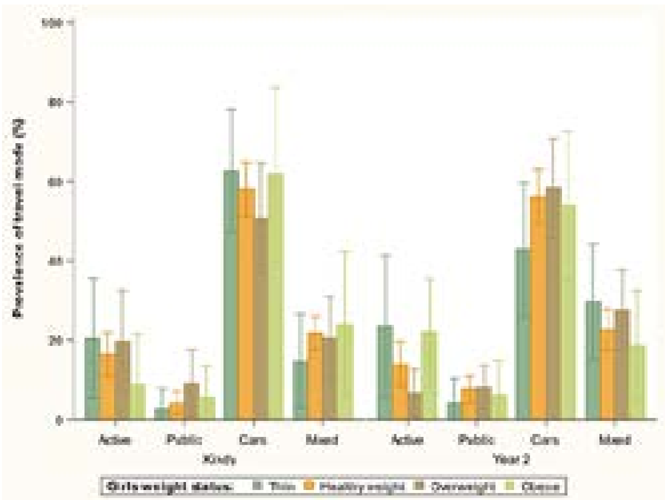


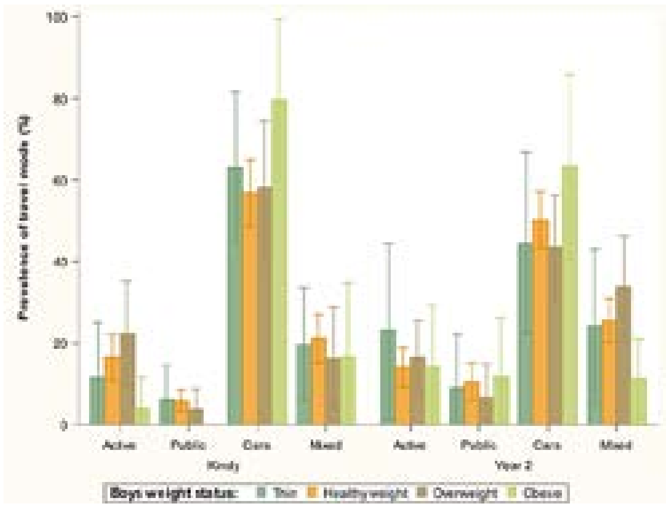

Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Kindy
Year 2
Girls SES: Low Middle High


Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Kindy
Year 2
Boys SES: Low Middle High


Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Kindy
Year 2
Girls cultural background: English European Middle-Eastern Asian


Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Kindy
Year 2
Boys cultural background: English European Middle-Eastern Asian


Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Kindy
Year 2
Girls weight status: Thin Healthy weight Overweight Obese


Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Kindy
Year 2
Boys weight status: Thin Healthy weight Overweight Obese

SOCIO-DEMOGRAPHIC DIFFERENCES

YEARS 4 & 6

Table 10.19, Table 10.20 and Figure 10.8 show the prevalence of usual travel modes home from school among children in Years 4 and 6, respectively, by sex, socio-demographic characteristics and BMI category in 2015.

Table 10.19 Prevalence of usual travel mode home from school, among children in Year 4 by sex, socio-demographic characteristics, and BMI category in 2015 (%, SE)

	Year 4							
	Active travel		Public transport		Car		Mixed modes	
ALL								
Locality								
Urban (ref)	16.1	(1.7)	6.8	(1.6)	56.3	(3.1)	20.8	(2.3)
Rural	**8.6**	**(1.7) a**	**26.6**	**(4.4) a**	**27.7**	**(4.1) a**	**37.1**	**(3.1) a**
SES								
Low	**10.3**	**(1.6) a**	**15.4**	**(5.7) a**	56.9	(7.9)	17.4	(4.0)
Middle	11.7	(2.7)	**15.9**	**(3.5) a**	**39.9**	**(5.2) a**	**32.5**	**(4.3) a**
High (ref)	18.4	(2.3)	6.1	(1.8)	53.5	(3.7)	22.0	(2.4)
Cultural background								
English-speaking (ref)	14.6	(1.4)	12.3	(2.3)	47.1	(3.2)	26.0	(2.3)
European	10.5	(7.1)	na		60.2	(11.1)	29.3	(12.9)
Middle Eastern	**4.9**	**(1.7) a**	**2.8**	**(1.6) a**	**86.5**	**(3.9) a**	**5.8**	**(3.2) a**
Asian	20.8	(5.9)	9.8	(5.6)	53.3	(8.8)	16.2	(4.4)
BMI category								
Thin	**25.1**	**(4.1) a**	5.1	(2.4)	39.0	(4.9)	30.9	(4.9)
Healthy weight (ref)	13.6	(1.6)	12.1	(2.4)	49.4	(3.3)	24.9	(2.6)
Overweight	12.3	(2.6)	12.5	(3.0)	52.3	(5.9)	22.9	(3.4)
Obese	**9.6**	**(3.0)**	10.5	(4.4)	58.6	(5.9)	21.3	(3.8)
GIRLS								
Locality								
Urban (ref)	14.7	(1.8)	6.0	(1.7)	58.2	(4.0)	21.0	(2.8)
Rural	**4.0**	**(1.6) a**	**29.9**	**(5.3) a**	**27.4**	**(5.0) a**	**38.6**	**(4.8) a**
SES								
Low	**9.6**	**(2.2) a**	14.6	(5.3)	58.6	(7.5)	17.3	(5.7)
Middle	**8.2**	**(2.6) a**	**16.0**	**(4.7) a**	42.0	(7.3)	**33.8**	**(5.5) a**
High (ref)	17.0	(2.5)	6.2	(2.4)	55.4	(4.9)	21.4	(2.8)
Cultural background								
English-speaking (ref)	12.0	(1.7)	12.6	(2.9)	48.6	(4.1)	26.8	(2.9)
European	7.2	(7.4)	na		**82.3**	**(10.9) a**	10.4	(9.1)
Middle Eastern	5.8	(2.0)	**2.9**	**(1.8) a**	**85.4**	**(4.4) a**	**5.8**	**(2.0) a**
Asian	23.3	(7.4)	4.8	(3.2)	55.7	(9.7)	16.2	(5.1)
BMI category								
Thin	18.4	(5.1)	**2.3**	**(1.7) a**	49.6	(7.2)	29.6	(6.7)
Healthy weight (ref)	11.2	(1.8)	11.3	(2.8)	51.9	(4.3)	25.6	(3.1)
Overweight	10.7	(3.3)	16.0	(4.8)	47.3	(6.3)	26.0	(4.8)
Obese	9.7	(5.0)	13.8	(5.7)	62.5	(7.3)	**14.1**	**(4.4) a**

	Year 4							
	Active travel		Public transport		Car		Mixed modes	
BOYS								
Locality								
Urban (ref)	17.6	(2.3)	7.6	(1.8)	54.2	(3.7)	20.5	(2.7)
Rural	13.0	(2.6)	**23.4**	**(4.6) a**	**28.0**	**(4.3) a**	**35.7**	**(3.9) a**
SES								
Low	11.1	(3.1)	16.2	(6.7)	55.3	(9.5)	17.4	(4.9)
Middle	15.7	(3.3)	**15.7**	**(3.2) a**	**37.7**	**(4.1) a**	31.0	(4.2)
High (ref)	19.9	(3.1)	5.9	(1.9)	51.5	(4.5)	22.7	(3.6)
Cultural background								
English-speaking (ref)	17.3	(1.9)	11.9	(2.1)	45.6	(3.5)	25.2	(2.7)
European	13.8	(13.2)	na		38.1	(18.3)	48.1	(20.0)
Middle Eastern	3.8	(3.8)	2.7	(2.9)	**87.8**	**(6.2) a**	**5.8**	**(4.9) a**
Asian	16.7	(7.6)	17.6	(10.4)	49.5	(10.3)	16.1	(7.3)
BMI category								
Thin	**31.9**	**(6.0) a**	8.0	(4.7)	**28.0**	**(6.1) a**	32.2	(7.4)
Healthy weight (ref)	16.0	(2.3)	12.8	(2.6)	46.9	(3.7)	24.3	(3.3)
Overweight	14.0	(4.1)	8.8	(3.3)	57.6	(7.1)	19.6	(4.3)
Obese	9.6	(3.8)	7.0	(3.9)	54.5	(7.0)	28.9	(5.9)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Table 10.20 Prevalence of usual travel mode home from school, among children in Year 6 by sex, socio-demographic characteristics and BMI category in 2015 (%, SE)

	Year 6							
	Active travel		Public transport		Car		Mixed modes	
ALL								
Locality								
Urban (ref)	22.4	(2.6)	13.4	(2.1)	38.4	(3.1)	25.8	(1.8)
Rural	14.6	(2.7)	**22.9**	**(3.1) a**	**22.3**	**(3.4) a**	**40.2**	**(3.1) a**
SES								
Low	16.4	(2.2)	15.8	(3.4)	43.6	(7.7)	24.2	(5.0)
Middle	20.0	(4.4)	16.2	(2.7)	**27.6**	**(3.1) a**	**36.2**	**(2.4) a**
High (ref)	23.3	(3.2)	15.0	(3.5)	36.6	(3.7)	25.2	(2.4)
Cultural background								
English-speaking (ref)	20.2	(2.0)	16.4	(1.9)	33.4	(2.6)	30.0	(1.7)
European	36.0	(14.6)	5.9	(5.9)	20.0	(8.6)	38.1	(13.6)
Middle Eastern	15.0	(4.6)	6.3	(4.9)	**64.6**	**(8.4) a**	**14.0**	**(4.8) a**
Asian	27.9	(4.3)	14.1	(5.0)	34.8	(8.6)	23.2	(6.1)
BMI category								
Thin	28.8	(5.5)	23.1	(5.5)	32.2	(4.9)	**15.9**	**(4.4) a**
Healthy weight (ref)	20.7	(2.1)	13.8	(1.9)	33.2	(2.7)	32.3	(2.0)
Overweight	17.1	(3.3)	18.5	(3.2)	**39.2**	**(3.6) a**	**25.2**	**(3.1) a**
Obese	19.5	(4.1)	18.7	(4.8)	38.5	(8.4)	23.3	(5.3)

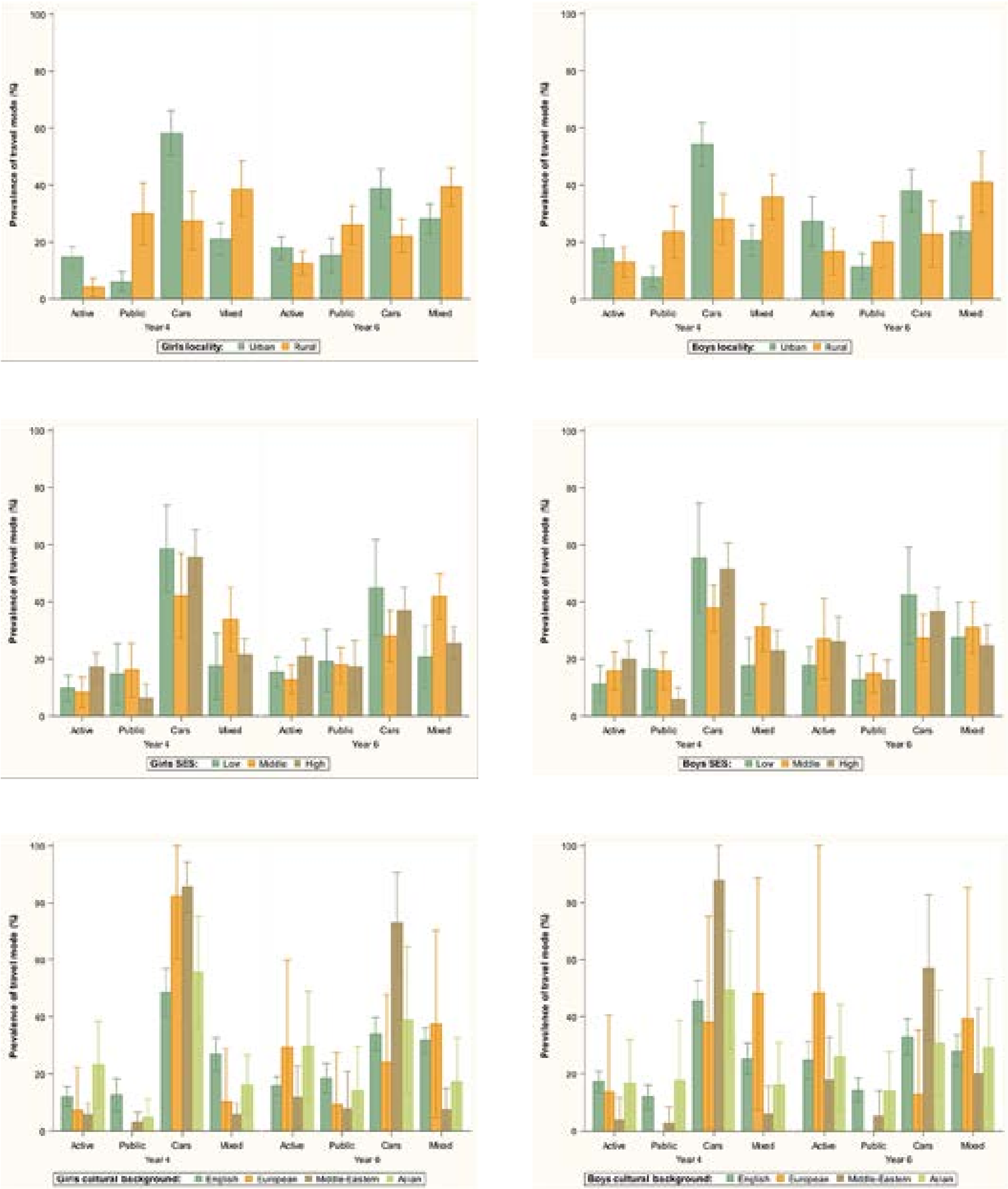
	Year 6							
	Active travel		Public transport		Car		Mixed modes	
GIRLS								
Locality								
Urban (ref)	17.8	(1.9)	15.3	(3.0)	38.8	(3.4)	28.1	(2.6)
Rural	12.5	(2.0)	**26.0**	**(3.3) a**	**22.0**	**(2.9) a**	**39.4**	**(3.4) a**
SES								
Low	15.3	(2.6)	19.2	(5.4)	44.9	(8.3)	20.6	(5.5)
Middle	**12.7**	**(2.4) a**	17.7	(3.0)	27.9	(4.4)	**41.8**	**(3.9) a**
High (ref)	20.8	(3.0)	17.0	(4.7)	36.7	(4.1)	25.5	(2.8)
Cultural background								
English-speaking (ref)	15.8	(1.6)	18.5	(2.6)	33.9	(2.9)	31.8	(2.3)
European	29.4	(15.0)	9.1	(9.0)	24.1	(11.8)	37.5	(16.2)
Middle Eastern	11.9	(5.4)	7.7	(6.4)	**73.0**	**(8.6) a**	**7.4**	**(3.7) a**
Asian	29.8	(9.4)	14.1	(7.7)	38.8	(12.7)	17.3	(7.5)
BMI category								
Thin	24.2	(6.6)	**28.3**	**(6.9) a**	34.4	(5.4)	**13.0**	**(4.7) a**
Healthy weight (ref)	15.6	(1.9)	14.4	(2.5)	34.6	(3.2)	35.4	(2.9)
Overweight	14.7	(4.3)	**22.6**	**(5.1) a**	36.7	(5.6)	26.0	(5.2)
Obese	21.8	(6.1)	23.8	(6.9)	36.9	(12.6)	**17.4**	**(6.9) a**
BOYS								
Locality								
Urban (ref)	27.2	(4.2)	11.4	(2.2)	37.9	(3.7)	23.5	(2.6)
Rural	16.6	(4.0)	20.0	(4.5)	**22.6**	**(5.8) a**	**40.9**	**(5.4) a**
SES								
Low	17.5	(3.2)	12.7	(4.1)	42.3	(8.4)	27.5	(6.1)
Middle	27.0	(7.0)	14.8	(3.4)	27.3	(4.0)	30.8	(4.5)
High (ref)	26.1	(4.3)	12.6	(3.4)	36.5	(4.2)	24.8	(3.6)
Cultural background								
English-speaking (ref)	24.8	(3.2)	14.3	(2.1)	32.8	(3.2)	28.1	(2.7)
European	48.2	(27.5)	na		12.7	(11.3)	39.2	(22.8)
Middle Eastern	17.8	(7.4)	5.1	(4.5)	**57.1**	**(12.6) a**	20.0	(11.4)
Asian	25.9	(9.1)	14.1	(6.8)	30.7	(9.2)	29.2	(11.9)
BMI category								
Thin	38.0	(10.8)	12.5	(6.6)	27.7	(12.9)	21.8	(7.1)
Healthy weight (ref)	26.2	(4.1)	13.0	(2.2)	31.7	(3.5)	29.1	(3.1)
Overweight	19.0	(4.5)	15.2	(3.5)	**41.2**	**(4.9) a**	24.6	(4.1)
Obese	17.0	(6.0)	13.4	(6.8)	40.2	(9.0)	29.4	(7.5)

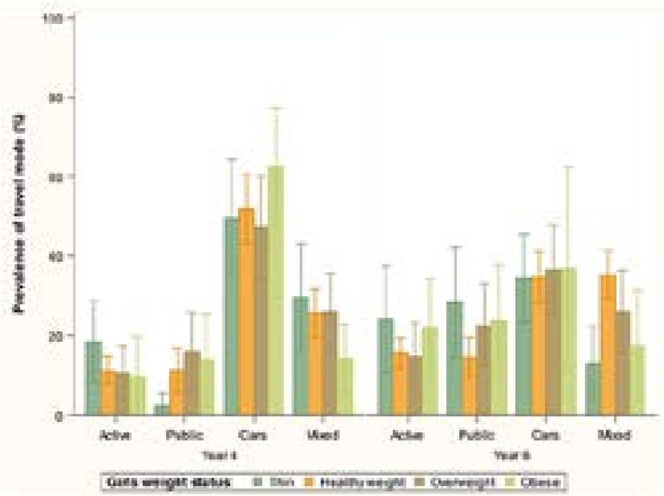
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

na *Indicates statistical significance could not be calculated due to low numbers.*

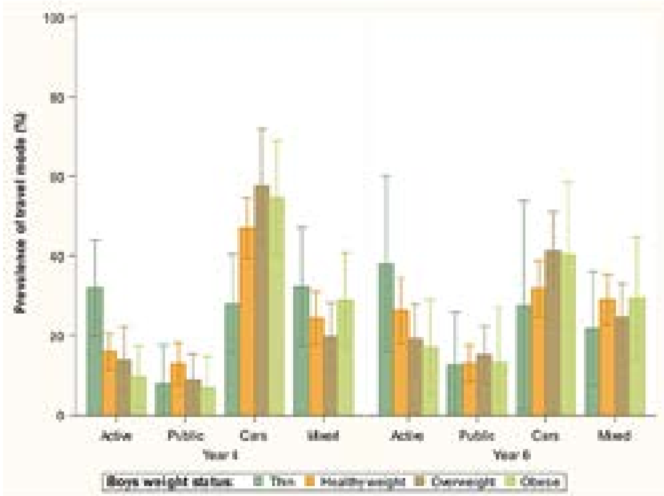
No letter means there was no statistical difference.

Figure 10.8 Prevalence of usual travel mode home from school among boys and girls in Years 4 and 6 by socio-demographic characteristics and BMI category in 2015 (%, 95%CI)





100
80
60
40
20
0
Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Year 4
Active
Public
Cars
Mixed
Year 6
Girls weight status:
Thin
Healthy weight
Overweight
Obese



100
80
60
40
20
0
Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Year 4
Active
Public
Cars
Mixed
Year 6
Boys weight status:
Thin
Healthy weight
Overweight
Obese

SUMMARY OF THE TRAVEL MODES TO AND FROM SCHOOL OF CHILDREN IN PRIMARY SCHOOL

The table below summarises the travel modes to and from school in children in primary school.

Travel mode	Guideline or recommendation	SPANS cut point	Prevalence (%)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
TO SCHOOL					
Active	There are no specific guidelines	Walked, cycled, skateboarded or scootered to school, 5 days a week	19.3%	14.7%	**2015:** Overall, the proportion of children using active travel to school was significantly lower among children from rural areas, low SES backgrounds and in the overweight and obese BMI categories **Change between 2010-15**: Overall, there were no significant changes in active travel to school between 2010 and 2015. Within subgroups, active travel to school significantly decreased among children from rural areas, low SES backgrounds, Middle Eastern and Asian cultural backgrounds, and in the overweight and obese BMI categories
Public transport	There are no specific guidelines	Took a bus, train, ferry +/- walking to school, 5 days a week	11.1%	8.2%	**2015:** Overall, the proportion of children using public transport to travel to school was significantly higher among children from rural areas and from low and middle SES backgrounds **Change between 2010-15**: Overall, there were no significant changes in public transport to school between 2010 and 2015. Within subgroups, public transport to travel to school significantly decreased only among children from urban areas
Car	There are no specific guidelines	Driven by car to school, 5 days a week	45.7%	53.9%[sig]	**2015:** Overall, the proportion of children driven to school was significantly higher among children from rural areas, Middle Eastern cultural backgrounds and in the obese BMI category **Change between 2010-15**: Overall, the proportion of children driven to school significantly increased between 2010 and 2015. Within subgroups, car travel to school significantly increased among children from urban areas, low SES backgrounds, Middle Eastern and Asian cultural backgrounds, and in the healthy weight and obese BMI categories
Mixed modes	There are no specific guidelines	Used a mix of active travel, public transport and car to school, 5 days a week	23.9%	23.2%	**2015:** Overall, the proportion of children using mixed modes of travel to school was significantly higher among children from rural areas and significantly lower among children from Middle Eastern and Asian cultural backgrounds **Change between 2010-15**: Overall, there were no significant changes in mixed mode transport to school between 2010 and 2015. Within subgroups, use of mixed modes of travel to school significantly increased among children from urban areas, low SES backgrounds, Middle Eastern and Asian cultural backgrounds, and in the healthy weight and obese BMI categories

Travel mode	Guideline or recommendation	SPANS cut point	Prevalence (%) 2010	Prevalence (%) 2015	Significant subgroup findings for 2015* & change between 2010-2015
HOME FROM SCHOOL					
Active	There are no specific guidelines	Walked, cycled, skateboarded or scootered home from school, 5 days a week	20.4%	16.4	**2015:** Overall, the proportion of children using active travel home from school was significantly lower among children from rural areas and low SES backgrounds, and was significantly higher among children from Asian cultural backgrounds and in the thin BMI category **Change between 2010-15**: Overall, there were no significant changes in active travel home from school between 2010 and 2015. Within subgroups, active travel home from school significantly decreased between 2010 and 2015 among children from rural areas, low SES backgrounds, Middle Eastern and Asian cultural backgrounds, and in the overweight and obese BMI categories
Public transport	There are no specific guidelines	Took a bus, train, ferry +/- walking home from school, 5 days a week	12.0%	10.0%	**2015:** Overall, the proportion of children using public transport to travel home from school was significantly higher among children from rural areas and middle SES backgrounds, and was significantly lower among children from European and Middle Eastern cultural backgrounds **Change between 2010-15**: Overall, there were no significant changes in public transport home from school between 2010 and 2015. Within subgroups, public transport to travel home from school significantly decreased only among children from urban areas
Car	There are no specific guidelines	Driven by car home from school, 5 days a week	43.8%	49.0%	**2015:** Overall, the proportion of children driven home from school was significantly lower among children from rural areas, and was significantly higher among children from Middle Eastern cultural backgrounds and in the obese BMI category **Change between 2010-15**: Overall, there were no significant changes in being driven home from school by car between 2010 and 2015. Within subgroups, car travel home from school significantly increased among children from urban areas, Middle Eastern cultural backgrounds and in the obese BMI category
Mixed modes	There are no specific guidelines	Used a mix of active travel, public transport and car home from school, 5 days a week	23.8%	24.6%	**2015:** Overall, the proportion of children using mixed modes of travel home from school was significantly higher among children from rural areas, middle SES backgrounds, and was significantly lower among children from Middle Eastern and Asian cultural backgrounds, and in the obese BMI category **Change between 2010-15**: Overall, and within subgroups, there were no significant changes in the proportion of children using mixed modes of travel home from school from between 2010 and 2015

sig *Indicates statistically significant difference at P < 0.05.*

* *Comparisons are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

SECONDARY SCHOOL

The following section reports on the self-reported findings of travel modes to and from school among adolescents in secondary school. The estimates should be interpreted in conjunction with their standard errors (SE) or the inter-quartile difference (IQD) value – a proportionally large SE or IQD means a less precise estimate.

TRAVEL TO SCHOOL

Tables 10.21, 10.22, 10.23 and 10.24 show the prevalence, mean and median trip time (minutes per day) spent in active transport, public transport, car and mixed modes of travel to school five days a week, respectively for 2015, and for 2010 for comparison. Figures 10.9 and 10.10 show the prevalence and the mean and median trip time (minutes per day) spent in each travel mode in 2015.

2015: Overall, the prevalence of adolescents' travel modes to school were 14% for active transport, 38% for public transport, 24% for car and 24% by mixed transport. The mean trip times were 15 minutes for active transport, 37 minutes for public transport, 15 minutes for car and 33 minutes for mixed modes.

Change between 2010-2015: Overall, there were no significant changes in the modes of travel to school among adolescents, between 2010 and 2015.

Table 10.21 Prevalence and trip time (minutes per day) spent travelling to school by active transport among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Active transport			
	Boys	Girls	2015	2010
ALL YEARS 2015				
Prevalence (%, SE)	16.2 (2.0)	11.9 (1.8)	14.1 (1.5)	14.4 (1.5)
Mean trip time (mins/day, SE)	15.7 (1.5)	14.3 (1.3)	15.1 (1.0)	22.4 (2.1)
Median trip time (mins/day, IQD*)	11.0 (14.1)	14.0 (10.1)	12.8 (14.4)	14.4 (14.8)
YEAR 8				
Prevalence (%, SE)	14.2 (1.9)	12.3 (2.0)	13.2 (1.6)	13.2 (1.7)
Mean trip time (mins/day, SE)	19.5 (3.4)	14.3 (1.0)	17.1 (2.0)	21.7 (1.9)
Median trip time (mins/day, IQD*)	14.2 (13.6)	14.2 (7.3)	14.2 (10.7)	14.4 (11.5)
YEAR 10				
Prevalence (%, SE)	18.2 (2.5)	**11.6 (2.3) a**	14.9 (1.8)	15.6 (1.7)
Mean trip time (mins/day, SE)	12.8 (1.5)	14.2 (2.0)	13.3 (1.2)	23.0 (3.6)
Median trip time (mins/day, IQD*)	9.5 (10.8)	9.9 (11.7)	9.8 (13.8)	13.9 (15.8)

a Indicates statistically significant difference at P < 0.05 between sex and within year group.
b Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.
na Indicates statistical significance could not be calculated due to low numbers.
No letter means there was no statistical difference.
**IQD = inter-quartile difference.*

Table 10.22 Prevalence and trip time (minutes per day) spent travelling to school by public transport including walking, among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Public transport							
	Boys		Girls		2015		2010	
ALL YEARS 2015								
Prevalence (%, SE)	36.5	(3.0)	39.9	(2.8)	38.2	(2.5)	39.3	(2.2)
Mean trip time (mins/day, SE)	40.9	(2.6)	33.1	(1.8)	36.8	(1.8)	39.1	(1.6)
Median trip time (mins/day, IQD*)	29.8	(26.3)	29.3	(26.1)	29.5	(25.2)	29.8	(29.3)
YEAR 8								
Prevalence (%, SE)	35.1	(3.3)	35.7	(3.0)	35.4	(2.7)	37.9	(2.4)
Mean trip time (mins/day, SE)	38.2	(2.6)	32.8	(2.3)	35.5	(2.2)	39.8	(1.9)
Median trip time (mins/day, IQD*)	29.6	(25.3)	29.3	(20.0)	29.5	(20.8)	29.8	(28.5)
YEAR 10								
Prevalence (%, SE)	37.9	(3.6)	44.0	(3.5)	41.0	(2.9)	40.7	(2.4)
Mean trip time (mins/day, SE)	43.4	(4.2)	33.3	(2.2)	38.0	(2.2)	38.5	(1.8)
Median trip time (mins/day, IQD*)	32.2	(29.7)	29.3	(29.3)	29.6	(25.5)	29.6	(29.7)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.
**IQD = inter-quartile difference.*

Table 10.23 Prevalence and trip time (minutes per day) spent travelling to school by car, among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Car							
	Boys		Girls		2015		2010	
ALL YEARS 2015								
Prevalence (%, SE)	24.8	(3.0)	22.2	(2.9)	23.5	(2.7)	18.5	(1.7)
Mean trip time (mins/day, SE)	16.1	(1.1)	13.7	(1.1)	15.0	(0.9)	15.1	(1.1)
Median trip time (mins/day, IQD*)	9.9	(12.7)	9.2	(10.3)	9.6	(13.2)	9.6	(13.3)
YEAR 8								
Prevalence (%, SE)	27.1	(3.8)	23.7	(3.3)	25.4	(3.3)	19.1	(2.0)
Mean trip time (mins/day, SE)	15.5	(1.1)	13.0	(1.4)	14.3	(1.0)	14.2	(0.9)
Median trip time (mins/day, IQD*)	9.8	(12.7)	8.8	(9.8)	9.3	(10.1)	9.0	(13.5)
YEAR 10								
Prevalence (%, SE)	22.5	(3.0)	20.8	(3.0)	21.7	(2.5)	17.9	(1.9)
Mean trip time (mins/day, SE)	16.7	(1.9)	14.5	(1.3)	15.7	(1.1)	16.1	(2.1)
Median trip time (mins/day, IQD*)	12.0	(10.5)	9.7	(12.1)	9.9	(12.1)	9.6	(10.1)

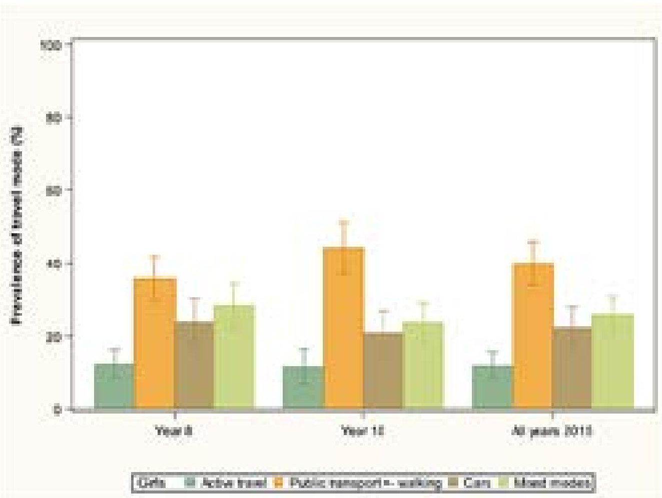
a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.
**IQD = inter-quartile difference.*

Table 10.24 Prevalence and trip time (minutes per day) spent travelling to school by mixed modes of transport, among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Mixed modes			
	Boys	**Girls**	**2015**	**2010**
ALL YEARS 2015				
Prevalence (%, SE)	22.6 (2.2)	25.9 (2.3)	24.2 (1.9)	27.8 (1.3)
Mean trip time (mins/day, SE)	35.2 (3.5)	30.4 (2.3)	32.6 (2.1)	35.3 (2.0)
Median trip time (mins/day, IQD*)	26.9 (26.9)	21.6 (24.9)	24.8 (26.3)	24.7 (27.7)
YEAR 8				
Prevalence (%, SE)	23.7 (2.9)	28.3 (3.0)	26.0 (2.4)	29.8 (1.7)
Mean trip time (mins/day, SE)	37.3 (6.1)	28.4 (1.7)	32.5 (3.0)	38.2 (2.7)
Median trip time (mins/day, IQD*)	26.6 (27.1)	21.1 (24.0)	24.1 (26.4)	27.6 (30.1)
YEAR 10				
Prevalence (%, SE)	21.5 (2.6)	23.5 (2.8)	22.5 (2.1)	25.8 (1.6)
Mean trip time (mins/day, SE)	32.8 (3.0)	32.8 (4.1)	32.8 (2.6)	31.9 (2.2)
Median trip time (mins/day, IQD*)	26.5 (25.2)	23.3 (26.2)	25.3 (26.4)	22.9 (25.5)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.
****IQD** = inter-quartile difference.*

Figure 10.9 Prevalence of travel mode to school among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



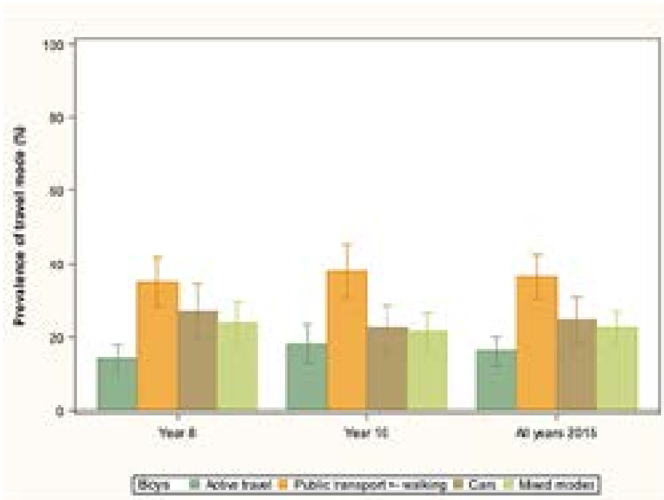
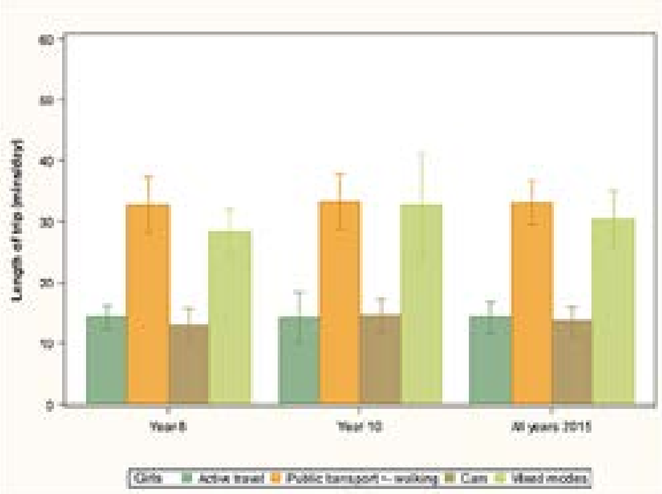
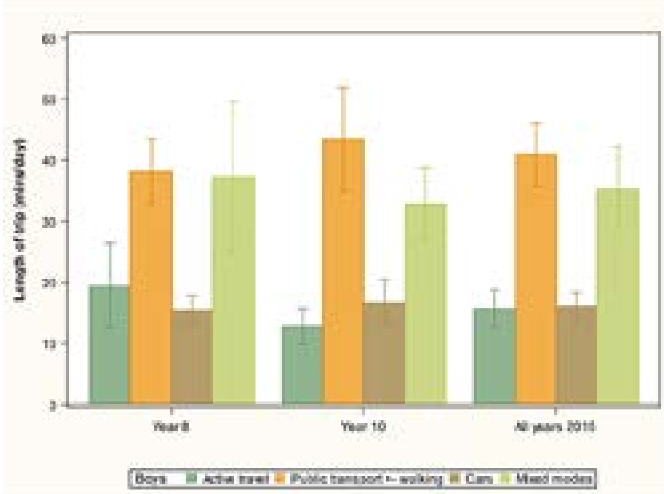


Figure 10.10 Mean length of trip to school by travel mode among adolescents in secondary school by sex and year group in 2015 (mins, 95%CI)





SOCIO-DEMOGRAPHIC DIFFERENCES

ACTIVE TRAVEL AND PUBLIC TRANSPORT

The current findings indicate that approximately one in seven (14%) adolescents used active transport and one in three (38%) used public transport to travel to school in the mornings. Table 10.25 shows the prevalence of travelling to school using active travel and public transport among adolescents in secondary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of active travel to school was significantly higher among adolescents from rural areas (20%), compared with adolescents from urban areas (12%); and among boys from rural areas (23%), compared with boys from urban areas (13%).

Overall, there were no significant differences in the prevalence of using public transport to travel to school between adolescents from rural areas, compared with adolescents from urban areas.

Change between 2010-2015: The prevalence of active travel to school significantly increased among boys from rural areas, from 12% in 2010 to 23% in 2015.

Overall, there were no significant changes in the prevalence of using public transport to travel to school among adolescents from urban areas and rural areas between 2010 and 2015.

Socio-economic status

2015: Overall, the prevalence of active travel to school was significantly higher among boys from low SES backgrounds (21%), compared with boys from high SES backgrounds (12%).

Overall, the prevalence of using public transport to travel to school was significantly higher among adolescents from middle SES backgrounds (45%), compared with adolescents from high SES backgrounds (38%); and among girls from middle SES backgrounds (52%), compared with girls from high SES backgrounds (39%).

Change between 2010-2015: The prevalence of active travel to school significantly decreased among girls from middle SES backgrounds, from 15% in 2010 to 7% in 2015.

The prevalence of using public transport to travel to school significantly increased among adolescents from middle SES backgrounds, from 38% in 2010 to 45% in 2015; and among girls from middle SES backgrounds, from 41% in 2010 to 52% in 2015.

Cultural background

2015: Overall, there were no significant differences in the prevalence of active travel to school between adolescents from different cultural backgrounds.

Overall, the prevalence of using public transport to travel to school was significantly lower among adolescents from Middle Eastern cultural backgrounds (17%), compared with adolescents from English-speaking backgrounds (39%).

Change between 2010-2015: The prevalence of active travel to school significantly increased among girls from Middle Eastern cultural backgrounds, from 4% in 2010 to 26% in 2015.

The prevalence of using public transport to travel to school significantly decreased among adolescents from European cultural backgrounds, from 52% in 2010 to 23% in 2015; among boys from European cultural backgrounds, from 65% in 2010 to 17% in 2015; and among girls from Middle Eastern cultural backgrounds, from 34% in 2010 to 8% in 2015.

Weight status

2015: Overall, there were no significant differences in the prevalence of active travel to school between adolescents in different BMI categories.

Overall, there were no significant differences in the prevalence of using public transport to travel to school between adolescents in different BMI categories.

Change between 2010-2015: There were no significant changes in the prevalence of active travel to school among adolescents in different BMI categories between 2010 and 2015.

There were no significant changes in the prevalence of using public transport to travel to school among adolescents in different BMI categories between 2010 and 2015.

Table 10.25 Prevalence of active travel and public transport modes to school, among adolescents in all year groups in secondary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	Active travel				Public transport			
	All years 2015		All years 2010		All years 2015		All years 2010	
ALL								
Locality								
Urban (ref)	12.0	(1.5)	13.8	(1.5)	36.6	(2.7)	40.3	(2.5)
Rural	**19.7**	**(2.8) a**	16.4	(3.3)	42.5	(5.0)	36.1	(4.5)
SES								
Low	18.3	(2.8)	17.7	(2.8)	32.3	(4.7)	36.3	(4.4)
Middle	10.9	(2.1)	15.8	(2.3)	**45.3**	**(2.4) a**	**38.4**	**(2.7) b**
High (ref)	12.5	(2.6)	10.1	(1.7)	37.8	(3.2)	42.8	(3.6)
Cultural background								
English-speaking (ref)	13.5	(1.4)	14.9	(1.4)	39.3	(2.5)	38.5	(2.1)
European	23.2	(8.4)	9.6	(4.4)	22.8	(7.5)	**51.6**	**(10.2) b**
Middle Eastern	20.2	(6.6)	10.8	(2.5)	**17.0**	**(5.3) a**	34.2	(9.4)
Asian	15.2	(3.3)	10.5	(3.4)	37.8	(6.5)	49.0	(6.1)
BMI category								
Thin	16.1	(3.4)	15.1	(3.2)	35.0	(4.9)	34.4	(4.4)
Healthy weight (ref)	13.8	(1.5)	13.7	(1.4)	39.1	(2.4)	40.4	(2.3)
Overweight	13.6	(2.3)	17.1	(2.4)	37.4	(3.4)	37.7	(3.4)
Obese	15.2	(3.7)	14.3	(3.1)	34.0	(5.9)	35.5	(4.9)
GIRLS								
Locality								
Urban (ref)	10.6	(2.2)	11.9	(1.5)	37.6	(3.1)	40.8	(2.8)
Rural	15.7	(3.5)	20.8	(4.2)	46.6	(5.6)	32.1	(5.8)
SES								
Low	15.5	(3.0)	18.0	(3.2)	30.9	(4.9)	33.4	(5.3)
Middle	6.8	(2.0)	**15.4**	**(2.9) b**	**51.6**	**(3.3) a**	**41.2**	**(4.2) b**
High (ref)	12.7	(3.4)	9.1	(1.6)	39.1	(3.8)	40.9	(4.3)
Cultural background								
English-speaking (ref)	11.1	(1.9)	14.6	(1.7)	41.3	(2.7)	39.1	(2.7)
European	15.7	(8.1)	na		26.9	(9.7)	29.8	(12.5)
Middle Eastern	25.8	(12.6)	**4.4**	**(2.4) b**	**7.8**	**(4.6) a**	**34.1**	**(13.1) b**
Asian	14.7	(3.2)	11.0	(4.1)	38.6	(9.7)	43.3	(6.5)
BMI category								
Thin	19.7	(5.4)	15.1	(3.6)	38.6	(6.0)	31.0	(4.6)
Healthy weight (ref)	11.5	(1.9)	13.3	(1.8)	40.4	(3.0)	39.8	(2.9)
Overweight	11.6	(2.9)	13.6	(2.7)	38.5	(3.6)	38.2	(4.5)
Obese	8.4	(3.1)	**24.2**	**(6.0) b**	39.3	(9.0)	38.2	(7.6)

	Active travel				Public transport			
	All years 2015		All years 2010		All years 2015		All years 2010	
BOYS								
Locality								
Urban (ref)	13.4	(1.8)	15.6	(2.1)	35.5	(3.3)	39.7	(3.2)
Rural	**23.1**	**(3.9) a**	**12.4**	**(3.3) b**	38.9	(5.8)	39.7	(4.1)
SES								
Low	**21.0**	**(3.7) a**	17.5	(3.8)	33.6	(5.6)	38.9	(5.1)
Middle	14.7	(3.4)	16.2	(2.5)	39.7	(3.1)	36.0	(2.6)
High (ref)	12.4	(2.9)	11.2	(2.2)	36.4	(3.9)	44.6	(4.3)
Cultural background								
English-speaking (ref)	15.9	(2.0)	15.2	(1.8)	37.5	(3.1)	38.0	(2.4)
European	32.8	(12.7)	15.4	(7.4)	17.4	(12.3)	**64.8**	**(10.8) b**
Middle Eastern	15.4	(6.5)	19.9	(7.6)	24.7	(8.2)	34.3	(9.6)
Asian	15.9	(5.6)	10.2	(4.8)	36.6	(6.1)	52.5	(8.0)
BMI category								
Thin	12.5	(3.8)	15.2	(6.3)	31.5	(6.3)	39.4	(7.0)
Healthy weight (ref)	16.0	(2.3)	14.1	(1.7)	37.8	(3.0)	40.9	(2.7)
Overweight	15.5	(3.1)	20.0	(3.4)	36.4	(5.0)	37.3	(3.9)
Obese	21.7	(6.1)	**8.3**	**(2.7) b**	29.0	(6.4)	33.9	(6.4)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and all year groups and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

CAR AND MIXED MODE TRAVEL

The current findings indicate that approximately one in four (24%) adolescents were driven to school by car and one in four (24%) used mixed modes to travel to school in the mornings. Table 10.26 shows the prevalence of travelling to school by car and by mixed transport modes among adolescents in secondary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of being driven to school by car was significantly lower among adolescents from rural areas (14%), compared with adolescents from urban areas (27%). The prevalence was significantly lower among girls from rural areas (12%), compared with girls from urban areas (26%); and among boys from rural areas (15%), compared with boys from urban areas (29%).

Overall, there were no significant differences in the prevalence of using mixed transport modes to travel to school between adolescents from rural areas, compared with adolescents from urban areas.

Change between 2010-2015: The prevalence of being driven to school by car significantly increased among adolescents from urban areas, from 19% in 2010 to 27% in 2015; and among boys from urban areas, from 18% in 2010 to 29% in 2015.

There were no significant changes in the prevalence of using mixed transport modes to travel to school among adolescents from rural and urban areas, between 2010 and 2015.

Socio-economic status

2015: Overall, the prevalence of being driven to school by car was significantly higher among girls from low SES backgrounds (29%), compared with girls from high SES backgrounds (17%).

Overall, the prevalence of using mixed transport modes to travel to school was significantly lower among adolescents from low SES (22%) and middle SES (22%) backgrounds, compared with adolescents from high SES backgrounds (29%). The prevalence was significantly lower among girls from middle SES backgrounds (21%), compared with girls from high SES backgrounds (31%); and among boys from low SES (19%) and middle SES (22%) backgrounds, compared with adolescents from high SES backgrounds (28%).

Change between 2010-2015: The prevalence of being driven to school by car significantly increased among boys from high SES backgrounds, from 13% in 2010 to 23% in 2015.

The prevalence of using mixed transport modes to travel to school significantly decreased among adolescents from middle SES backgrounds, from 27% in 2010 to 22% in 2015; and among boys from middle SES backgrounds, from 29% in 2010 to 22% in 2015.

Cultural background

2015: Overall, the prevalence of being driven to school by car was significantly higher among adolescents from Middle Eastern cultural backgrounds (48%), compared with adolescents from English-speaking backgrounds (22%). The prevalence was significantly higher among girls from Middle Eastern cultural backgrounds (53%), compared with girls from English-speaking backgrounds (21%); and among boys from Middle Eastern cultural backgrounds (43%), compared with boys from English-speaking backgrounds (24%).

Overall, there were no significant differences in the prevalence of using mixed transport modes to travel to school among adolescents from different cultural backgrounds.

Change between 2010-2015: The prevalence of being driven to school by car significantly increased among boys from European cultural backgrounds, from 6% in 2010 to 32% in 2015; and boys from Middle Eastern cultural backgrounds, from 14% in 2010 to 43% in 2015.

The prevalence of using mixed transport modes to travel to school significantly decreased among boys from English-speaking backgrounds, from 28% in 2010 to 22% in 2015.

Weight status

2015: Overall, there were no significant differences in the prevalence of being driven to school by car between adolescents in different BMI categories.

Overall, there were no significant differences in the prevalence of using mixed transport modes to travel to school between adolescents in different BMI categories.

Change between 2010-2015: The prevalence of being driven to school by car significantly increased among boys in the overweight BMI category, from 18% in 2010 to 29% in 2015.

There were no significant changes in the prevalence of using mixed transport modes to travel to school among adolescents in different BMI categories between 2010 and 2015.

Table 10.26 Prevalence of car and mixed transport modes to school, among adolescents in all year groups in secondary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	Car		Mixed modes	
	All years 2015	All years 2010	All years 2015	All years 2010
ALL				
Locality				
Urban (ref)	27.2 (3.3)	**18.9 (1.9) b**	24.2 (2.3)	27.1 (1.5)
Rural	**13.6 (2.3) a**	17.2 (3.4)	24.2 (3.4)	30.4 (2.5)
SES				
Low	27.8 (4.7)	21.7 (3.5)	**21.6 (3.0) a**	24.3 (2.5)
Middle	22.1 (2.6)	18.4 (2.2)	**21.7 (2.1) a**	**27.4 (1.6) b**
High (ref)	20.3 (3.3)	15.9 (2.4)	29.4 (2.7)	31.2 (1.9)
Cultural background				
English-speaking (ref)	22.4 (2.5)	18.3 (1.6)	24.7 (2.0)	28.2 (1.3)
European	28.2 (7.5)	18.2 (5.6)	25.9 (9.3)	20.5 (6.4)
Middle Eastern	**47.6 (10.7) a**	31.2 (8.5)	15.2 (6.2)	23.9 (4.6)
Asian	23.6 (4.1)	16.3 (4.1)	23.4 (6.2)	24.2 (2.8)
BMI category				
Thin	23.4 (5.3)	22.0 (3.5)	25.6 (4.1)	28.5 (4.2)
Healthy weight (ref)	22.5 (2.4)	17.9 (1.7)	24.5 (2.1)	27.9 (1.4)
Overweight	25.7 (3.6)	17.9 (2.6)	23.3 (2.9)	27.2 (2.3)
Obese	27.3 (5.9)	22.5 (4.3)	23.5 (4.0)	27.7 (4.2)
GIRLS				
Locality				
Urban (ref)	25.6 (3.7)	20.3 (2.4)	26.1 (2.8)	27.1 (1.7)
Rural	**12.2 (2.4) a**	14.3 (3.3)	25.4 (3.9)	32.9 (6.0)
SES				
Low	**28.7 (5.2) a**	20.3 (4.7)	24.8 (3.4)	28.3 (5.1)
Middle	20.2 (2.6)	18.2 (2.5)	**21.4 (3.4) a**	25.2 (2.5)
High (ref)	17.3 (3.4)	18.5 (3.1)	30.9 (3.6)	31.5 (2.4)
Cultural background				
English-speaking (ref)	20.6 (2.7)	18.0 (1.8)	27.0 (2.6)	28.3 (2.1)
European	24.9 (11.0)	38.7 (11.2)	32.4 (12.0)	31.5 (10.1)
Middle Eastern	**52.8 (13.9) a**	43.5 (14.5)	13.6 (5.5)	18.1 (3.4)
Asian	26.7 (5.3)	16.5 (4.2)	20.1 (6.6)	29.2 (4.3)
BMI category				
Thin	20.5 (6.6)	22.8 (4.2)	21.3 (4.5)	31.0 (5.3)
Healthy weight (ref)	22.3 (2.7)	18.6 (2.1)	25.8 (2.6)	28.2 (2.3)
Overweight	22.0 (4.0)	17.9 (3.7)	27.8 (3.3)	30.3 (3.5)
Obese	25.6 (7.2)	17.4 (6.8)	26.7 (5.9)	20.2 (5.5)

	Car				Mixed modes			
	All years 2015		All years 2010		All years 2015		All years 2010	
BOYS								
Locality								
Urban (ref)	28.8	(3.9)	**17.6**	**(2.1) b**	22.3	(2.7)	27.0	(2.0)
Rural	**14.8**	**(3.0) a**	19.8	(4.4)	23.2	(4.1)	28.0	(3.1)
SES								
Low	27.0	(5.1)	23.2	(3.5)	**18.5**	**(3.7) b**	20.5	(2.3)
Middle	23.7	(3.5)	18.6	(2.7)	**21.9**	**(2.1) b**	**29.2**	**(2.3) b**
High (ref)	23.4	(4.2)	**13.3**	**(2.3) b**	27.8	(2.9)	30.9	(2.8)
Cultural background								
English-speaking (ref)	24.2	(2.9)	18.6	(2.0)	22.4	(2.2)	**28.2**	**(1.8) b**
European	32.4	(10.7)	**5.9**	**(3.0) b**	17.4	(13.0)	13.9	(6.7)
Middle Eastern	**43.3**	**(10.6) a**	**13.7**	**(5.6) b**	16.5	(8.3)	32.2	(8.2)
Asian	19.2	(7.7)	16.2	(5.2)	28.3	(8.0)	21.0	(3.1)
BMI category								
Thin	26.2	(6.3)	20.6	(5.0)	29.9	(6.9)	24.8	(6.2)
Healthy weight (ref)	22.8	(2.9)	17.3	(2.0)	23.3	(2.6)	27.7	(1.7)
Overweight	29.2	(4.4)	**18.0**	**(2.5) b**	18.9	(3.5)	24.7	(2.9)
Obese	28.8	(6.5)	25.5	(5.2)	20.5	(5.6)	32.2	(6.5)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and all year groups and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

SOCIO-DEMOGRAPHIC DIFFERENCES

Table 10.27, Table 10.28 and Figure 10.11 show the prevalence of usual travel modes to school among adolescents in Years 8 and 10, respectively, by sex, socio-demographic characteristics and BMI category in 2015.

Table 10.27 Prevalence of usual travel mode to school, among adolescents in Year 8 by sex, socio-demographic characteristics and BMI category in 2015 (%, SE)

	Year 8							
	Active travel		Public transport		Car		Mixed modes	
ALL								
Locality								
Urban (ref)	11.1	(1.5)	32.7	(3.0)	30.0	(4.0)	26.2	(3.0)
Rural	**19.1**	**(3.2) a**	42.8	(5.2)	**12.8**	**(2.8) a**	25.3	(3.6)
SES								
Low	16.5	(2.8)	29.0	(4.5)	33.3	(5.2)	**21.3**	**(3.4) a**
Middle	11.5	(2.7)	**45.2**	**(3.2) a**	18.3	(2.7)	25.0	(3.2)
High (ref)	11.6	(2.3)	32.9	(3.9)	23.9	(4.6)	31.5	(3.4)
Cultural background								
English-speaking (ref)	12.8	(1.4)	37.3	(2.7)	23.8	(3.0)	26.1	(2.3)
European	23.4	(8.2)	**11.3**	**(6.9) a**	31.9	(15.4)	33.4	(12.7)
Middle Eastern	20.4	(8.0)	**16.0**	**(7.7) a**	**54.8**	**(14.1) a**	8.8	(7.2)
Asian	15.8	(5.1)	28.8	(6.0)	23.9	(5.6)	31.6	(7.9)
BMI category								
Thin	11.4	(4.0)	36.7	(6.4)	19.2	(5.3)	32.7	(5.2)
Healthy weight (ref)	12.8	(1.6)	36.0	(2.7)	24.3	(3.0)	26.9	(2.9)
Overweight	14.9	(3.0)	34.2	(4.1)	28.3	(4.7)	22.6	(3.2)
Obese	14.0	(4.8)	31.6	(6.5)	**34.1**	**(6.5) a**	20.3	(4.6)
GIRLS								
Locality								
Urban (ref)	10.8	(2.3)	32.0	(3.3)	27.8	(4.1)	29.4	(3.6)
Rural	16.7	(3.7)	**46.6**	**(6.0) a**	**11.6**	**(3.0) a**	25.1	(4.8)
SES								
Low	15.2	(3.3)	26.5	(4.5)	**31.8**	**(5.0) a**	26.4	(4.2)
Middle	9.2	(3.1)	**48.3**	**(4.0) a**	18.3	(4.0)	24.1	(4.6)
High (ref)	11.9	(3.2)	34.4	(4.1)	19.9	(4.3)	33.8	(4.7)
Cultural background								
English-speaking (ref)	11.2	(1.8)	39.2	(2.9)	21.5	(3.1)	28.1	(3.2)
European	17.2	(8.0)	**5.8**	**(4.2) a**	32.6	(18.4)	44.3	(14.5)
Middle Eastern	25.3	(14.6)	**7.8**	**(5.0) a**	**56.7**	**(19.6) a**	10.2	(6.8)
Asian	18.6	(5.2)	**21.1**	**(7.5) a**	28.2	(6.3)	32.1	(8.7)
BMI category								
Thin	9.0	(4.9)	48.4	(7.5)	18.7	(7.7)	23.9	(5.8)
Healthy weight (ref)	12.2	(2.3)	34.9	(3.0)	22.5	(3.0)	30.4	(3.4)
Overweight	13.5	(3.9)	35.8	(4.7)	26.7	(4.8)	24.0	(4.0)
Obese	11.6	(4.6)	27.9	(8.1)	32.8	(8.8)	27.6	(7.4)

	Year 8							
	Active travel		Public transport		Car		Mixed modes	
BOYS								
Locality								
Urban (ref)	11.4	(1.8)	33.4	(3.8)	32.2	(4.9)	23.0	(3.6)
Rural	**21.3**	**(4.7) a**	39.4	(6.0)	**13.8**	**(3.1) a**	25.5	(4.7)
SES								
Low	17.7	(3.6)	31.6	(5.5)	34.8	(6.4)	**15.9**	**(4.2) a**
Middle	13.5	(3.7)	42.4	(4.2)	18.3	(3.2)	25.8	(3.2)
High (ref)	11.4	(3.2)	31.4	(5.3)	28.0	(5.9)	29.2	(3.9)
Cultural background								
English-speaking (ref)	14.3	(2.0)	35.5	(3.4)	25.9	(3.5)	24.3	(2.6)
European	42.3	(25.3)	27.9	(23.3)	29.7	(24.7)	na	
Middle Eastern	15.3	(5.9)	24.4	(13.4)	**52.8**	**(11.6) a**	7.4	(8.0)
Asian	11.7	(6.3)	39.6	(8.6)	17.8	(8.6)	30.8	(10.2)
BMI category								
Thin	14.0	(6.7)	24.0	(7.1)	19.9	(6.1)	**42.2**	**(8.6) a**
Healthy weight (ref)	13.4	(2.2)	37.1	(3.7)	26.1	(4.0)	23.5	(3.8)
Overweight	16.3	(4.6)	32.7	(5.4)	29.8	(5.7)	21.3	(4.0)
Obese	16.4	(7.5)	**35.3**	**(8.3)**	35.4	(8.4)	13.0	(5.3)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Table 10.28 Prevalence of usual travel mode to school, among adolescents in Year 10 by sex, socio-demographic characteristics and BMI category in 2015 (%, SE)

	Year 10							
	Active travel		Public transport		Car		Mixed modes	
ALL								
Locality								
Urban (ref)	12.9	(1.9)	40.5	(3.2)	24.4	(3.1)	22.2	(2.3)
Rural	**20.2**	**(3.6) a**	42.2	(5.2)	**14.4**	**(2.3) a**	23.2	(4.9)
SES								
Low	20.0	(3.3)	35.3	(5.6)	22.8	(4.7)	21.9	(3.9)
Middle	10.4	(2.2)	45.5	(2.9)	**25.8**	**(3.2) a**	**18.4**	**(2.3) a**
High (ref)	13.5	(3.4)	43.0	(3.9)	16.4	(3.0)	27.1	(2.9)
Cultural background								
English-speaking (ref)	14.3	(1.9)	41.4	(2.9)	21.1	(2.4)	23.2	(2.4)
European	23.0	(10.3)	33.3	(13.7)	24.8	(9.3)	18.9	(11.3)
Middle Eastern	19.8	(9.0)	**18.2**	**(6.8) a**	**39.3**	**(9.3) a**	22.6	(8.0)
Asian	14.8	(2.8)	44.1	(8.3)	23.4	(4.8)	17.7	(5.5)
BMI category								
Thin	21.7	(6.8)	33.0	(6.9)	28.4	(7.5)	16.9	(6.0)
Healthy weight (ref)	14.7	(2.0)	42.1	(3.1)	20.9	(2.2)	22.3	(2.3)
Overweight	12.3	(2.7)	40.8	(4.7)	23.0	(4.1)	24.0	(3.8)
Obese	16.4	(4.8)	36.5	(8.5)	20.4	(7.4)	26.7	(7.1)

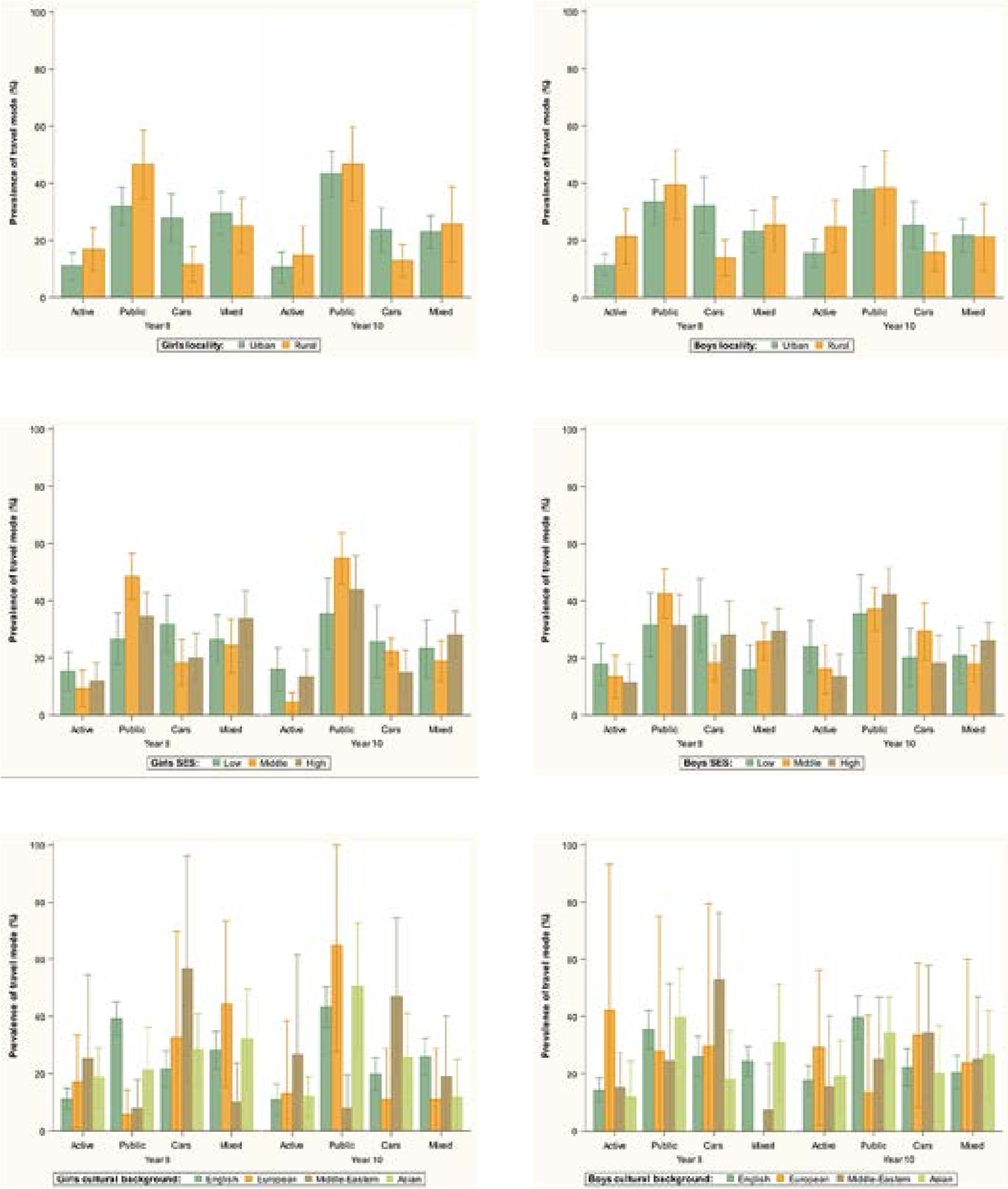
	Year 10							
	Active travel		Public transport		Car		Mixed modes	
GIRLS								
Locality								
Urban (ref)	10.5	(2.6)	43.2	(3.9)	23.5	(3.9)	22.8	(2.9)
Rural	14.7	(5.0)	46.7	(6.4)	**12.9**	**(2.8) a**	25.7	(6.5)
SES								
Low	15.8	(3.7)	35.3	(6.2)	25.7	(6.2)	23.2	(5.0)
Middle	**4.4**	**(1.7) a**	54.7	(4.4)	22.1	(2.4)	**18.9**	**(3.5) a**
High (ref)	13.4	(4.6)	43.7	(5.9)	14.8	(3.8)	28.0	(4.0)
Cultural background								
English-speaking (ref)	11.0	(2.7)	43.4	(3.5)	19.8	(2.9)	25.9	(3.1)
European	13.0	(12.7)	64.8	(18.4)	11.1	(8.7)	11.1	(8.7)
Middle Eastern	26.6	(17.4)	**7.8**	**(5.9) a**	**46.8**	**(13.8) a**	18.9	(10.5)
Asian	12.0	(3.4)	50.5	(11.0)	25.6	(7.6)	11.8	(6.5)
BMI category								
Thin	**34.0**	**(10.8) a**	25.4	(8.8)	22.9	(9.4)	17.7	(6.3)
Healthy weight (ref)	10.9	(2.6)	45.6	(4.0)	22.0	(3.3)	21.4	(3.2)
Overweight	9.8	(3.5)	41.2	(5.4)	17.4	(4.4)	**31.6**	**(4.4) a**
Obese	5.1	(4.5)	51.3	(13.3)	18.0	(8.7)	25.6	(9.9)
GIRLS								
Locality								
Urban (ref)	15.4	(2.5)	37.6	(4.1)	25.3	(4.1)	21.6	(2.9)
Rural	**24.9**	**(4.6) a**	38.4	(6.3)	15.7	(3.3)	21.1	(5.8)
SES								
Low	23.8	(4.5)	35.3	(6.8)	20.1	(5.0)	20.8	(4.8)
Middle	16.0	(4.3)	36.9	(3.8)	29.2	(4.9)	**17.9**	**(3.1) a**
High (ref)	13.5	(3.9)	42.1	(4.6)	18.3	(4.7)	26.1	(3.1)
Cultural background								
English-speaking (ref)	17.6	(2.6)	39.6	(3.7)	22.3	(3.2)	20.5	(2.8)
European	29.3	(13.4)	13.5	(13.3)	33.4	(12.5)	23.8	(17.9)
Middle Eastern	15.5	(12.2)	25.0	(10.8)	34.5	(11.6)	25.0	(10.8)
Asian	18.9	(6.3)	34.4	(6.1)	20.1	(8.3)	26.5	(7.8)
BMI category								
Thin	10.8	(4.9)	39.7	(10.8)	33.2	(10.5)	16.3	(8.5)
Healthy weight (ref)	18.7	(3.2)	38.5	(4.0)	19.7	(2.8)	23.1	(2.7)
Overweight	14.7	(3.4)	40.3	(7.3)	28.5	(6.0)	16.4	(4.9)
Obese	26.7	(8.5)	23.0	(7.7)	22.6	(8.5)	27.7	(9.6)

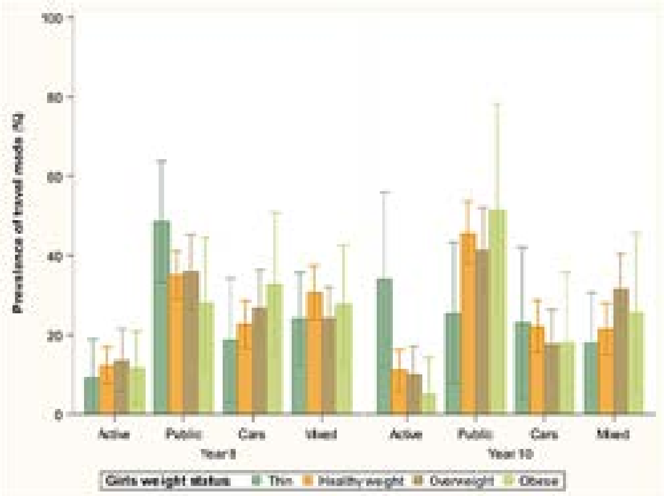
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

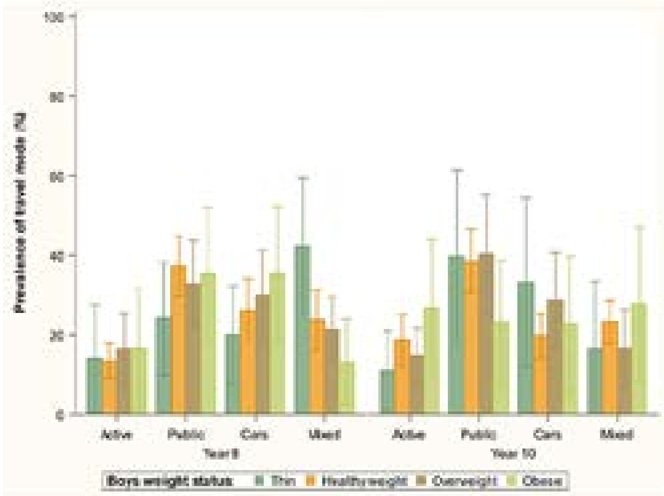
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 10.11 Prevalence of usual travel mode to school among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)




Prevalence of travel mode (%)
100
80
60
40
20
0
Active
Public
Cars
Mixed
Active
Public
Cars
Mixed
Year 8
Year 10
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of travel mode (%)
100
80
60
40
20
0
Active
Public
Cars
Mixed
Active
Public
Cars
Mixed
Year 8
Year 10
Boys weight status
Thin
Healthy weight
Overweight
Obese

TRAVEL HOME FROM SCHOOL

Tables 10.29, 10.30, 10.31, and 10.32 show the prevalence, mean and the median trip time (minutes per day) spent in active transport, public transport, car and mixed modes of travel home from school five days a week, respectively for 2015, and for 2010 for comparison. Figure 10.12 and 10.13 show the prevalence and mean trip time (minutes per day) spent in each travel mode in 2015.

2015: Overall, the prevalence of adolescents' travel modes home from school were 17% for active transport, 45% for public transport, 15% for car and 23% for mixed transport. The mean trip times were 16 minutes for active transport, 36 minutes for public transport, 16 minutes for car and 34 minutes for mixed modes.

Change between 2010-2015: Overall, the prevalence of travelling home from school by car significantly increased among adolescents, from 10% in 2010 to 15% in 2015.

Table 10.29 Prevalence and trip time (minutes per day) spent travelling home from school by active transport among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Active transport			
	Boys	Girls	2015	2010
ALL YEARS 2015				
Prevalence (%, SE)	17.7 (2.0)	16.3 (2.2)	17.0 (1.7)	16.6 (1.7)
Mean trip time (mins/day, SE)	15.7 (1.3)	16.6 (1.6)	16.1 (1.1)	20.3 (1.2)
Median trip time (mins/day, IQD*)	10.8 (13.5)	13.8 (11.4)	13.3 (13.1)	14.5 (14.9)
YEAR 8				
Prevalence (%, SE)	16.1 (2.0)	17.6 (2.6)	16.9 (1.9)	16.1 (2.0)
Mean trip time (mins/day, SE)	18.1 (2.7)	16.0 (1.1)	17.0 (1.5)	19.2 (1.3)
Median trip time (mins/day, IQD*)	12.2 (14.1)	13.9 (10.9)	13.6 (11.3)	13.3 (10.2)
YEAR 10				
Prevalence (%, SE)	19.2 (2.7)	15.0 (2.6)	17.1 (1.9)	17.1 (1.8)
Mean trip time (mins/day, SE)	13.6 (1.5)	17.2 (2.7)	15.2 (1.6)	21.4 (1.8)
Median trip time (mins/day, IQD*)	9.3 (12.7)	13.0 (14.0)	13.1 (13.7)	16.6 (18.2)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.
**IQD = inter-quartile difference.*

Table 10.30 Prevalence and trip time (minutes per day) spent travelling home from school by public transport including walking, among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Public transport							
	Boys		Girls		2015		2010	
ALL YEARS 2015								
Prevalence (%, SE)	45.3	(3.6)	44.9	(3.6)	45.1	(3.0)	47.9	(2.4)
Mean trip time (mins/day, SE)	38.5	(2.4)	33.8	(1.6)	36.2	(1.7)	39.0	(1.9)
Median trip time (mins/day, IQD*)	29.4	(30.9)	29.3	(25.5)	29.5	(27.4)	29.7	(27.9)
YEAR 8								
Prevalence (%, SE)	45.3	(3.8)	41.9	(3.6)	43.6	(3.1)	46.4	(2.7)
Mean trip time (mins/day, SE)	35.2	(2.3)	35.9	(2.3)	35.5	(1.9)	41.1	(2.5)
Median trip time (mins/day, IQD*)	28.0	(29.5)	29.6	(23.0)	29.5	(25.4)	29.7	(25.6)
YEAR 10								
Prevalence (%, SE)	45.3	(4.2)	47.8	(4.3)	46.6	(3.5)	49.4	(2.7)
Mean trip time (mins/day, SE)	41.8	(3.5)	32.0	(1.9)	36.7	(2.2)	37.0	(2.0)
Median trip time (mins/day, IQD*)	30.7	(36.5)	27.3	(27.7)	29.2	(29.3)	29.6	(29.8)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.
**IQD = inter-quartile difference.*

Table 10.31 Prevalence and trip time (minutes per day) spent travelling home from school by car, among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Car							
	Boys		Girls		2015		2010	
ALL YEARS 2015								
Prevalence (%, SE)	16.3	(2.6)	14.3	(2.8)	15.3	(2.5)	**9.5**	**(1.2) b**
Mean trip time (mins/day, SE)	17.2	(1.2)	14.4	(1.0)	15.9	(0.8)	15.5	(0.9)
Median trip time (mins/day, IQD*)	13.3	(13.8)	9.7	(10.5)	10.6	(12.0)	9.9	(14.2)
YEAR 8								
Prevalence (%, SE)	16.3	(2.8)	13.4	(2.8)	14.8	(2.7)	9.8	(1.5)
Mean trip time (mins/day, SE)	17.5	(1.8)	14.1	(1.3)	16.0	(1.0)	16.7	(1.5)
Median trip time (mins/day, IQD*)	13.6	(14.5)	9.5	(11.0)	13.1	(12.5)	14.1	(14.4)
YEAR 10								
Prevalence (%, SE)	16.3	(2.9)	15.2	(3.2)	15.7	(2.5)	**9.2**	**(1.2) b**
Mean trip time (mins/day, SE)	16.9	(1.8)	14.6	(1.4)	15.8	(1.1)	14.2	(1.2)
Median trip time (mins/day, IQD*)	10.1	(12.5)	9.7	(10.2)	9.9	(10.9)	9.7	(12.0)

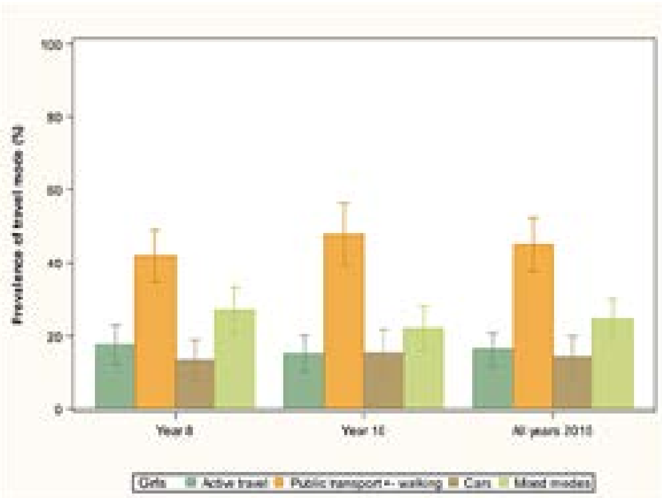
a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.
**IQD = inter-quartile difference.*

Table 10.32 Prevalence and trip time (minutes per day) spent travelling home from school by mixed modes of transport, among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE/IQD)

	Mixed modes							
	Boys		Girls		2015		2010	
ALL YEARS 2015								
Prevalence (%, SE)	20.7	(1.6)	24.5	(2.8)	22.6	(1.8)	26.0	(1.3)
Mean trip time (mins/day, SE)	35.6	(3.9)	31.9	(1.9)	33.6	(2.1)	33.0	(1.9)
Median trip time (mins/day, IQD*)	27.4	(24.0)	23.6	(25.0)	24.6	(25.3)	24.2	(26.0)
YEAR 8								
Prevalence (%, SE)	22.3	(2.3)	27.1	(3.2)	24.7	(2.3)	27.7	(1.7)
Mean trip time (mins/day, SE)	36.8	(6.7)	28.6	(2.1)	32.3	(3.2)	34.0	(2.2)
Median trip time (mins/day, IQD*)	24.1	(22.2)	20.6	(22.1)	22.7	(22.1)	25.8	(27.8)
YEAR 10								
Prevalence (%, SE)	19.2	(1.9)	22.0	(3.1)	20.6	(2.0)	24.2	(1.7)
Mean trip time (mins/day, SE)	34.2	(3.1)	35.9	(3.5)	35.1	(2.2)	31.9	(2.1)
Median trip time (mins/day, IQD*)	31.9	(24.9)	26.4	(32.0)	28.0	(28.3)	22.6	(23.8)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.
**IQD = inter-quartile difference.*

Figure 10.12 Prevalence of travel mode home from school among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



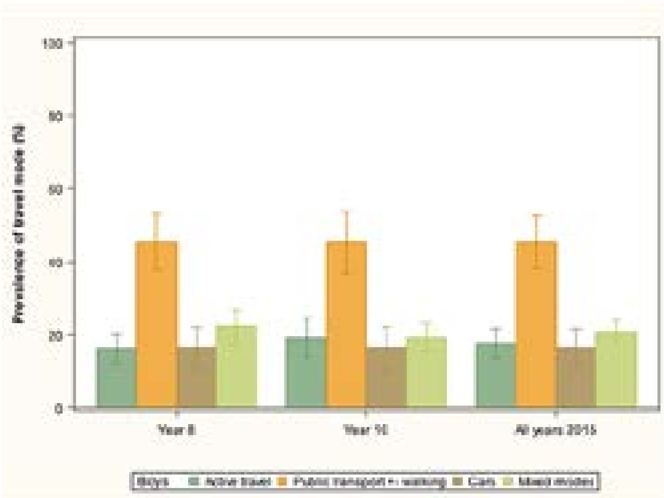
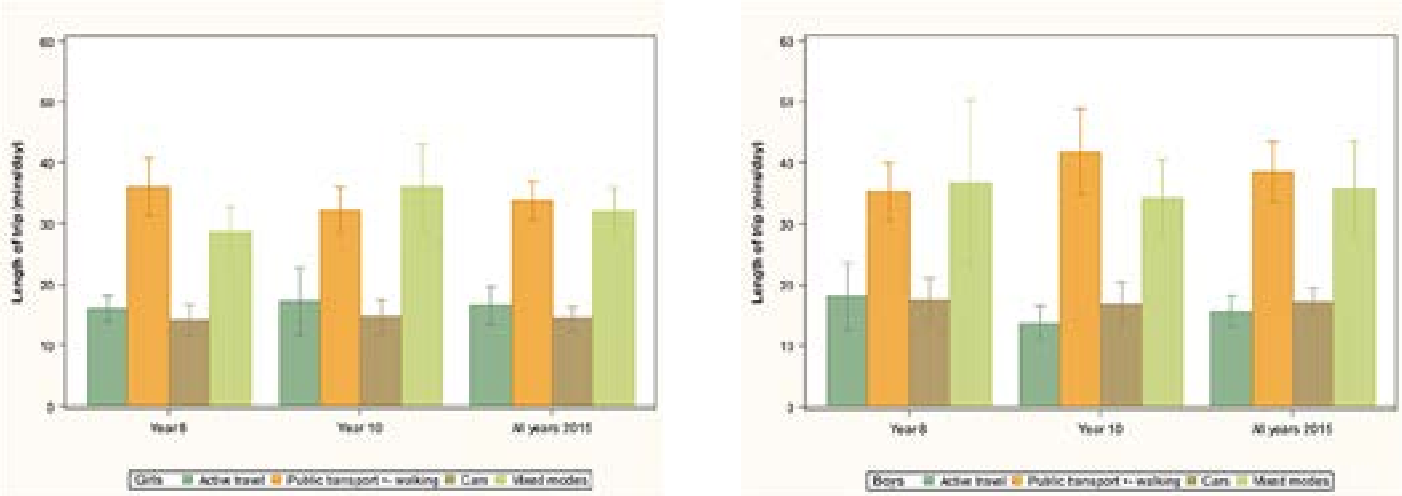


Figure 10.13 Mean length of trip home from school by travel mode among adolescents in secondary school by sex and year group in 2015 (mins, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

ACTIVE TRAVEL AND PUBLIC TRANSPORT

The current findings indicate that approximately one in six (17%) adolescents used active transport, and almost half (45%) used public transport, to travel home from school. Table 10.33 shows the prevalence of travelling home from school using active travel and public transport among adolescents in secondary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of active travel home from school was significantly higher among boys from rural areas (24%), compared with boys from urban areas (15%).

Overall, there were no significant differences in the prevalence of using public transport to travel home from school between adolescents from rural areas, compared with adolescents from urban areas.

Change between 2010-2015: Overall, there were no significant changes in the prevalence of active travel home from school among adolescents from rural and urban areas between 2010 and 2015.

Overall, there were no significant changes in the prevalence of using public transport to travel home from school among adolescents from rural and urban areas between 2010 and 2015.

Socio-economic status

2015: Overall, there were no significant changes in the prevalence of active travel home from school among adolescents from different SES backgrounds.

Overall, the prevalence of using public transport to travel home from school was significantly lower among adolescents from low SES backgrounds (36%), compared with adolescents from high SES backgrounds (51%). The prevalence was significantly lower among girls from low SES backgrounds (33%), compared with girls from high SES backgrounds (51%); and among boys from low SES backgrounds (39%), compared with boys from high SES backgrounds (51%).

Change between 2010-2015: Overall, there were no significant changes in the prevalence of active travel from school among adolescents from different SES backgrounds between 2010 and 2015.

Overall, there were no significant changes in the prevalence of using public transport to travel from school among adolescents from different SES backgrounds between 2010 and 2015.

Cultural background

2015: Overall, there were no significant differences in the prevalence of active travel home from school among adolescents from different cultural backgrounds.

Overall, the prevalence of using public transport to travel home from school was significantly lower among adolescents from Middle Eastern cultural backgrounds (21%), compared with adolescents from English-speaking backgrounds (46%); and among girls from Middle Eastern cultural backgrounds (13%), compared with girls from English-speaking backgrounds (46%).

Change between 2010-2015: The prevalence of active travel home from school significantly increased among adolescents from European cultural backgrounds, from 9% in 2010 to 27% in 2015; and among girls from European cultural backgrounds, from 3% in 2010 to 20% in 2015 and, from Middle Eastern cultural backgrounds, from 5% in 2010 to 28% in 2015.

The prevalence of using public transport to travel home from school significantly decreased among adolescents from European cultural backgrounds, from 63% in 2010 to 29% in 2015; among girls from Middle Eastern cultural backgrounds, from 44% in 2010 to 13% in 2015; and among boys from European cultural backgrounds, from 66% in 2010 to 30% in 2015.

Weight status

2015: Overall, there were no significant differences in the prevalence of active travel home from school among adolescents in different BMI categories.

Overall, the prevalence of using public transport to travel home from school was significantly lower among girls in the overweight BMI category (41%), compared with girls in the healthy weight BMI category (47%).

Change between 2010-2015: There were no significant changes in the prevalence of active travel home from school among adolescents in different BMI categories between 2010 and 2015.

There were no significant changes in the prevalence of using public transport to travel home from school among adolescents in different BMI categories between 2010 and 2015.

Table 10.33 Prevalence of active travel and public transport modes home from school, among adolescents in all year groups in secondary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	Active travel				Public transport			
	All years 2015		All years 2010		All years 2015		All years 2010	
ALL								
Locality								
Urban (ref)	15.3	(1.9)	15.8	(1.8)	45.9	(3.5)	49.6	(2.7)
Rural	21.5	(3.3)	19.1	(3.5)	42.9	(5.5)	42.3	(5.3)
SES								
Low	21.8	(3.5)	20.1	(3.1)	**35.8**	**(5.0) a**	40.4	(4.5)
Middle	13.4	(2.2)	17.2	(2.7)	49.0	(3.4)	46.4	(3.2)
High (ref)	15.1	(2.6)	13.0	(2.2)	51.4	(4.7)	55.9	(3.5)
Cultural background								
English-speaking (ref)	16.5	(1.5)	17.1	(1.7)	46.2	(3.0)	47.1	(2.3)
European	27.1	(9.6)	**8.6**	**(4.2) b**	28.8	(8.2)	**63.2**	**(9.0) b**
Middle Eastern	19.5	(7.3)	14.7	(2.8)	**21.1**	**(6.7) a**	42.0	(9.1)
Asian	19.2	(4.5)	12.9	(3.5)	44.8	(6.0)	58.8	(6.6)
BMI category								
Thin	16.9	(4.1)	21.0	(4.7)	42.5	(6.0)	43.9	(4.7)
Healthy weight (ref)	17.2	(1.6)	15.4	(1.5)	47.3	(2.9)	49.7	(2.4)
Overweight	16.3	(2.9)	18.9	(2.5)	**41.0**	**(4.0) a**	43.4	(4.0)
Obese	15.1	(3.5)	19.4	(4.0)	40.0	(5.5)	43.5	(5.3)
GIRLS								
Locality								
Urban (ref)	15.4	(2.7)	13.9	(1.8)	45.6	(4.3)	49.5	(2.9)
Rural	18.9	(4.4)	22.5	(4.3)	42.8	(6.0)	36.9	(6.2)
SES								
Low	21.6	(4.2)	20.0	(3.2)	**32.8**	**(5.3) a**	38.5	(4.9)
Middle	10.7	(2.4)	17.6	(3.5)	51.7	(3.9)	45.6	(5.0)
High (ref)	15.5	(3.6)	10.7	(2.3)	51.4	(6.5)	54.3	(3.4)
Cultural background								
English-speaking (ref)	15.1	(2.0)	16.6	(1.9)	45.9	(3.6)	46.3	(2.8)
European	19.7	(8.2)	**2.5**	**(2.5) b**	28.1	(10.1)	59.3	(12.8)
Middle Eastern	28.2	(13.2)	**4.5**	**(2.4) b**	**13.4**	**(7.1) a**	**43.6**	**(12.1) b**
Asian	22.8	(5.4)	13.6	(4.2)	44.6	(8.3)	55.7	(8.8)
BMI category								
Thin	22.6	(6.3)	22.6	(5.9)	40.5	(6.5)	39.1	(5.9)
Healthy weight (ref)	16.1	(2.1)	14.8	(1.9)	46.9	(3.4)	47.8	(2.7)
Overweight	14.1	(3.8)	13.8	(2.8)	41.8	(5.0)	46.9	(4.8)
Obese	16.7	(4.9)	27.9	(6.8)	37.3	(7.4)	41.2	(7.8)

	Active travel				Public transport			
	All years 2015		All years 2010		All years 2015		All years 2010	
BOYS								
Locality								
Urban (ref)	15.1	(1.8)	17.7	(2.3)	46.3	(4.1)	49.7	(3.4)
Rural	**23.9**	**(4.6) a**	16.0	(3.6)	43.0	(6.5)	47.4	(4.8)
SES								
Low	22.0	(4.1)	20.2	(4.4)	**38.8**	**(5.7) a**	42.1	(5.5)
Middle	15.9	(3.4)	16.8	(2.6)	46.5	(4.7)	47.1	(2.9)
High (ref)	14.7	(3.0)	15.4	(2.7)	51.3	(4.6)	57.5	(4.7)
Cultural background								
English-speaking (ref)	17.8	(2.1)	17.7	(1.9)	46.4	(3.6)	47.9	(2.6)
European	38.3	(18.9)	12.4	(6.8)	29.7	(16.1)	**65.5**	**(10.9) b**
Middle Eastern	12.0	(7.0)	29.4	(8.9)	27.8	(9.9)	39.6	(9.9)
Asian	14.1	(4.9)	12.4	(4.9)	45.1	(6.1)	60.7	(7.5)
BMI category								
Thin	10.9	(4.0)	18.6	(6.5)	44.6	(7.9)	51.1	(7.1)
Healthy weight (ref)	18.2	(2.4)	16.1	(1.7)	47.6	(3.5)	51.5	(3.0)
Overweight	18.4	(3.4)	23.2	(3.7)	40.1	(5.4)	40.4	(4.4)
Obese	13.5	(5.6)	14.1	(3.7)	42.6	(7.0)	44.8	(7.4)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and all year groups and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

CAR AND MIXED MODE TRAVEL

The current findings indicate approximately one in seven (15%) adolescents were driven home from school by car and one in four (23%) adolescents used mixed modes to travel home from school. Table 10.34 shows the prevalence of travelling home from school by car and by mixed transport modes among adolescents in secondary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of being driven home from school by car was significantly lower among adolescents from rural areas (9%), compared with adolescents from urban areas (18%); and among girls from rural areas (7%), compared with girls from urban areas (17%).

Overall, there were no significant differences in the prevalence of using mixed transport modes to travel from school among adolescents from rural areas, compared with adolescents from urban areas.

Change between 2010-2015: The prevalence of being driven home from school by car significantly increased among adolescents from urban areas, from 9% in 2010 to 18% in 2015; and among boys from urban areas, from 8% in 2010 to 18% in 2015.

There were no significant changes in the prevalence of using mixed transport modes to travel home from school among adolescents from rural and urban areas between 2010 and 2015.

Socio-economic status

2015: Overall, the prevalence of being driven home from school by car was significantly higher among adolescents from low SES backgrounds (22%), compared with adolescents from high SES backgrounds (9%). The prevalence was significantly higher among girls from low SES backgrounds (22%), compared with girls from high SES backgrounds (8%); and among boys from low SES backgrounds (21%), compared with boys from high SES backgrounds (12%).

Overall, there were no significant differences in the prevalence of using mixed transport modes to travel home from school among adolescents from different SES backgrounds.

Change between 2010-2015: The prevalence of being driven from home from school by car significantly increased among adolescents from high SES backgrounds, from 5% in 2010 to 10% in 2015; and among boys from high SES backgrounds, from 4% in 2010 to 12% in 2015.

The prevalence of using mixed transport modes to travel from school significantly decreased among boys from low SES backgrounds, from 25% in 2010 to 18% in 2015.

Cultural background

2015: Overall, the prevalence of being driven home from school by car was significantly higher among adolescents from Middle Eastern cultural backgrounds (47%), compared with adolescents from English-speaking backgrounds (14%). The prevalence was significantly higher among girls from Middle Eastern cultural backgrounds (47%), compared with girls from English-speaking backgrounds (13%); and among boys from Middle Eastern cultural backgrounds (47%), compared with boys from English-speaking backgrounds (15%).

Overall, the prevalence of using mixed transport modes to travel home from school was significantly lower among adolescents from Middle Eastern cultural backgrounds (13%), compared with adolescents from English-speaking backgrounds (23%).

Change between 2010-2015: The prevalence of being driven home from school by car significantly increased among adolescents from English-speaking backgrounds, from 9% in 2010 to 14% in 2015. The prevalence significantly increased among boys from English-speaking backgrounds, from 9% in 2010 to 15% in 2015; and among boys from Middle Eastern cultural backgrounds, from 15% in 2010 to 47% in 2015.

There were no significant changes in the prevalence of using mixed transport modes to travel home from school among adolescents from different cultural backgrounds between 2010 and 2015.

Weight status

2015: Overall, the prevalence of being driven home from school by car was significantly higher among adolescents in the overweight BMI category (19%), compared with adolescents in the healthy weight BMI category (14%); and among boys in the overweight BMI category (21%), compared with boys in the healthy BMI category (14%).

Overall, there were no significant differences in the prevalence of using mixed transport modes to travel home from school among adolescents from different BMI categories.

Change between 2010-2015: The prevalence of being driven home from school by car significantly increased among adolescents in the healthy weight BMI category, from 8% in 2010 to 14% in 2015. The prevalence significantly increased among boys in the healthy weight BMI category, from 7% in 2010 to 14% in 2015; and among boys in the overweight BMI category, from 12% in 2010 to 21% in 2015.

There were no significant changes in the prevalence of using mixed transport modes to travel from school among adolescents in different BMI categories between 2010 and 2015.

Table 10.34 Prevalence of car and mixed transport modes to travel home from school, among adolescents in all year groups in secondary school by sex, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	Car				Mixed modes			
	All years 2015		All years 2010		All years 2015		All years 2010	
ALL								
Locality								
Urban (ref)	17.5	(3.2)	**9.1**	**(1.4) b**	21.3	(2.1)	25.4	(1.5)
Rural	**9.4**	**(2.0) a**	10.7	(2.2)	26.2	(4.0)	27.8	(2.6)
SES								
Low	**21.5**	**(4.7) a**	12.6	(2.3)	20.9	(2.7)	26.9	(2.6)
Middle	14.0	(2.1)	11.3	(1.7)	23.6	(2.5)	25.1	(1.6)
High (ref)	9.9	(1.9)	**5.0**	**(1.2) b**	23.6	(3.5)	26.1	(2.1)
Cultural background								
English-speaking (ref)	14.4	(2.0)	**9.3**	**(1.1) b**	23.0	(2.1)	26.4	(1.3)
European	12.5	(6.5)	4.5	(3.4)	31.6	(8.3)	23.7	(6.7)
Middle Eastern	**46.8**	**(11.2) a**	26.6	(6.8)	**12.6**	**(4.3) a**	16.7	(4.4)
Asian	12.6	(3.2)	7.1	(2.6)	23.3	(4.3)	21.2	(3.5)
BMI category								
Thin	16.3	(5.1)	11.5	(2.9)	24.3	(3.8)	23.6	(3.4)
Healthy weight (ref)	13.5	(1.9)	**8.3**	**(1.2) b**	22.1	(2.0)	26.5	(1.4)
Overweight	**19.0**	**(3.7) a**	11.4	(2.0)	23.7	(2.9)	26.3	(2.3)
Obese	21.3	(6.3)	15.2	(3.6)	23.6	(4.7)	22.0	(4.1)

	Car		Mixed modes	
	All years 2015	All years 2010	All years 2015	All years 2010
GIRLS				
Locality				
Urban (ref)	16.7 (3.7)	10.3 (1.9)	22.3 (3.2)	26.3 (1.7)
Rural	**7.3 (2.0) a**	8.0 (2.0)	31.0 (5.3)	32.6 (5.1)
SES				
Low	**22.0 (5.5) a**	12.9 (3.4)	23.6 (4.1)	28.5 (3.9)
Middle	12.4 (2.1)	11.1 (2.1)	25.2 (3.5)	25.8 (2.5)
High (ref)	8.1 (2.3)	6.1 (1.7)	25.0 (5.4)	28.9 (2.2)
Cultural background				
English-speaking (ref)	13.4 (2.5)	9.2 (1.4)	25.6 (3.0)	27.9 (1.8)
European	16.2 (9.0)	8.8 (8.5)	36.0 (12.2)	29.4 (11.8)
Middle Eastern	**46.6 (14.2) a**	34.5 (10.4)	11.8 (5.6)	17.3 (6.3)
Asian	11.9 (3.4)	7.8 (3.0)	20.6 (4.5)	22.9 (6.5)
BMI category				
Thin	14.9 (5.8)	11.3 (3.4)	22.0 (4.4)	27.0 (5.7)
Healthy weight (ref)	12.9 (2.4)	9.1 (1.8)	24.0 (3.1)	28.4 (1.9)
Overweight	17.3 (4.5)	11.0 (2.9)	26.8 (3.8)	28.2 (3.7)
Obese	19.9 (7.7)	11.7 (4.2)	26.1 (6.9)	19.2 (6.6)
BOYS				
Locality				
Urban (ref)	18.4 (3.6)	**8.0 (1.4) b**	20.2 (1.8)	24.7 (2.1)
Rural	11.2 (2.4)	13.2 (3.4)	21.9 (3.3)	23.3 (2.1)
SES				
Low	**21.0 (4.8) a**	12.3 (2.8)	18.2 (2.0)	**25.4 (2.8) b**
Middle	15.5 (2.9)	11.5 (2.0)	22.1 (2.3)	24.5 (2.6)
High (ref)	11.8 (2.6)	**3.9 (1.0) b**	22.2 (2.6)	23.3 (2.9)
Cultural background				
English-speaking (ref)	15.3 (2.3)	**9.4 (1.4) b**	20.5 (1.7)	25.0 (1.8)
European	6.9 (7.1)	1.9 (1.9)	25.0 (15.5)	20.3 (7.1)
Middle Eastern	**46.9 (11.9) a**	**15.1 (6.9) b**	13.3 (5.6)	15.9 (4.4)
Asian	13.6 (4.8)	6.7 (2.9)	27.2 (5.3)	20.2 (3.1)
BMI category				
Thin	17.7 (6.0)	11.8 (4.4)	26.8 (5.8)	18.6 (4.2)
Healthy weight (ref)	14.2 (2.2)	**7.6 (1.3) b**	20.1 (1.7)	24.8 (2.0)
Overweight	**20.8 (4.3) a**	**11.7 (2.3) b**	20.7 (3.6)	24.7 (2.9)
Obese	22.7 (6.9)	17.3 (5.0)	21.2 (6.2)	23.7 (5.8)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and all year groups and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

SOCIO-DEMOGRAPHIC DIFFERENCES

Table 10.35, Table 10.36 and Figure 10.14 show the prevalence of usual travel modes home from school among adolescents in Years 8 and 10, respectively by sex, socio-demographic characteristics and BMI category in 2015.

Table 10.35 Prevalence of usual travel mode home from school, among adolescents in Year 8 by sex, socio-demographic characteristics and BMI category in 2015 (%, SE)

	Year 8			
	Active travel	Public transport	Car	Mixed modes
ALL				
Locality				
Urban (ref)	15.2 (2.1)	43.8 (3.7)	17.0 (3.4)	23.9 (2.8)
Rural	21.2 (3.5)	42.9 (5.7)	**9.1 (2.2) a**	26.8 (4.2)
SES				
Low	21.6 (3.5)	**33.4 (4.7) a**	**22.9 (4.9) a**	22.1 (3.6)
Middle	12.8 (2.9)	51.4 (3.9)	10.6 (2.1)	25.2 (2.7)
High (ref)	15.8 (3.1)	46.7 (5.2)	10.6 (2.4)	26.9 (4.4)
Cultural background				
English-speaking (ref)	16.3 (1.7)	45.0 (3.0)	13.7 (2.0)	25.0 (2.4)
European	23.4 (8.2)	26.4 (9.6)	7.9 (4.2)	42.3 (11.4)
Middle Eastern	24.3 (11.0)	**18.2 (9.9) a**	**49.3 (16.5) a**	**8.2 (5.3) a**
Asian	22.0 (6.7)	41.6 (6.5)	10.2 (3.9)	26.3 (5.7)
BMI category				
Thin	15.4 (4.5)	45.5 (7.0)	13.2 (5.1)	26.0 (5.2)
Healthy weight (ref)	17.2 (2.0)	45.6 (3.1)	12.4 (2.0)	24.8 (2.7)
Overweight	15.9 (3.9)	**37.8 (4.4) a**	**19.4 (4.4) a**	26.9 (3.6)
Obese	18.4 (5.2)	41.0 (6.8)	**27.7 (7.5) a**	**12.8 (4.1) a**
GIRLS				
Locality				
Urban (ref)	16.4 (3.3)	41.1 (4.2)	16.3 (3.5)	26.2 (3.8)
Rural	20.9 (4.4)	44.0 (6.4)	**5.2 (1.6) a**	29.9 (5.4)
SES				
Low	24.3 (4.5)	**28.8 (4.9) a**	**22.4 (5.3) a**	24.5 (4.4)
Middle	11.9 (3.5)	50.7 (4.8)	10.1 (3.1)	27.2 (3.8)
High (ref)	15.4 (4.2)	47.9 (5.9)	6.9 (1.7)	29.7 (6.0)
Cultural background				
English-speaking (ref)	15.6 (2.3)	44.5 (3.7)	12.5 (2.4)	27.3 (3.5)
European	17.2 (8.0)	**16.3 (7.8) a**	10.4 (4.9)	**56.1 (14.7) a**
Middle Eastern	39.7 (19.1)	**6.9 (5.4) a**	**45.2 (19.3) a**	8.2 (7.0)
Asian	**31.0 (8.6) a**	32.4 (6.9)	7.1 (3.0)	29.6 (6.8)
BMI category				
Thin	11.8 (5.1)	49.3 (8.4)	15.9 (7.6)	23.1 (6.0)
Healthy weight (ref)	17.2 (2.8)	42.9 (3.7)	10.8 (2.3)	29.1 (3.8)
Overweight	17.6 (6.3)	37.4 (5.5)	16.8 (5.3)	28.2 (4.3)
Obese	28.1 (7.8)	36.5 (9.1)	**28.0 (10.0) a**	**7.4 (4.1) a**

	Year 8							
	Active travel		Public transport		Car		Mixed modes	
BOYS								
Locality								
Urban (ref)	14.0	(2.1)	46.7	(4.5)	17.7	(3.9)	21.6	(2.8)
Rural	21.5	(4.8)	41.8	(6.6)	12.6	(2.9)	24.0	(4.1)
SES								
Low	18.7	(3.7)	38.5	(5.1)	**23.4**	**(4.8) a**	19.5	(3.5)
Middle	13.6	(3.8)	52.0	(5.3)	11.0	(2.5)	23.4	(2.9)
High (ref)	16.2	(3.9)	45.5	(6.0)	14.4	(3.8)	23.9	(4.3)
Cultural background								
English-speaking (ref)	17.0	(2.2)	45.4	(3.7)	14.8	(2.2)	22.8	(2.3)
European	42.3	(25.3)	57.7	(25.3)	na		na	
Middle Eastern	6.7	(4.1)	31.2	(17.8)	**54.0**	**(17.5) a**	8.2	(8.8)
Asian	9.7	(5.4)	54.1	(7.8)	14.5	(6.7)	21.7	(8.5)
BMI category								
Thin	19.6	(7.9)	41.0	(9.9)	10.0	(5.1)	29.4	(9.1)
Healthy weight (ref)	17.2	(2.5)	48.4	(3.9)	14.0	(2.6)	20.4	(2.7)
Overweight	14.3	(4.8)	38.1	(6.0)	**21.8**	**(5.0) a**	25.8	(4.9)
Obese	9.0	(6.3)	45.5	(8.6)	27.5	(9.6)	18.1	(6.2)

a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference

Table 10.36 Prevalence of usual travel mode home from school, among adolescents in Year 10 by sex, socio-demographic characteristics and BMI category in 2015 (%, SE)

	Year 10							
	Active travel		Public transport		Car		Mixed modes	
ALL								
Locality								
Urban (ref)	15.3	(2.1)	48.0	(4.2)	18.0	(3.4)	18.8	(1.9)
Rural	21.8	(3.7)	42.9	(5.9)	9.7	(2.1) a	25.6	(5.2)
SES								
Low	22.1	(3.8)	38.0	(5.8) a	20.2	(4.9) a	19.7	(2.8)
Middle	14.0	(2.6)	46.6	(4.3)	17.3	(3.4) a	22.0	(3.6)
High (ref)	14.4	(3.0)	56.2	(5.4)	9.1	(2.4)	20.3	(3.2)
Cultural background								
English-speaking (ref)	16.6	(2.0)	47.3	(3.5)	15.1	(2.5)	20.9	(2.3)
European	31.0	(13.4)	31.2	(13.0)	17.4	(12.3)	20.4	(13.5)
Middle Eastern	14.2	(7.7)	24.3	(9.5) a	44.0	(10.2) a	17.5	(6.9)
Asian	17.4	(3.9)	47.1	(7.7)	14.3	(4.1)	21.3	(4.6)
BMI category								
Thin	18.7	(6.4)	39.1	(7.7)	19.8	(6.2)	22.4	(4.8)
Healthy weight (ref)	17.1	(2.1)	48.8	(3.4)	14.6	(2.2)	19.5	(2.0)
Overweight	16.6	(3.2)	44.2	(5.7)	18.7	(4.2)	20.4	(3.5)
Obese	11.7	(4.4)	39.0	(8.3)	15.0	(6.4)	34.3	(7.9) a

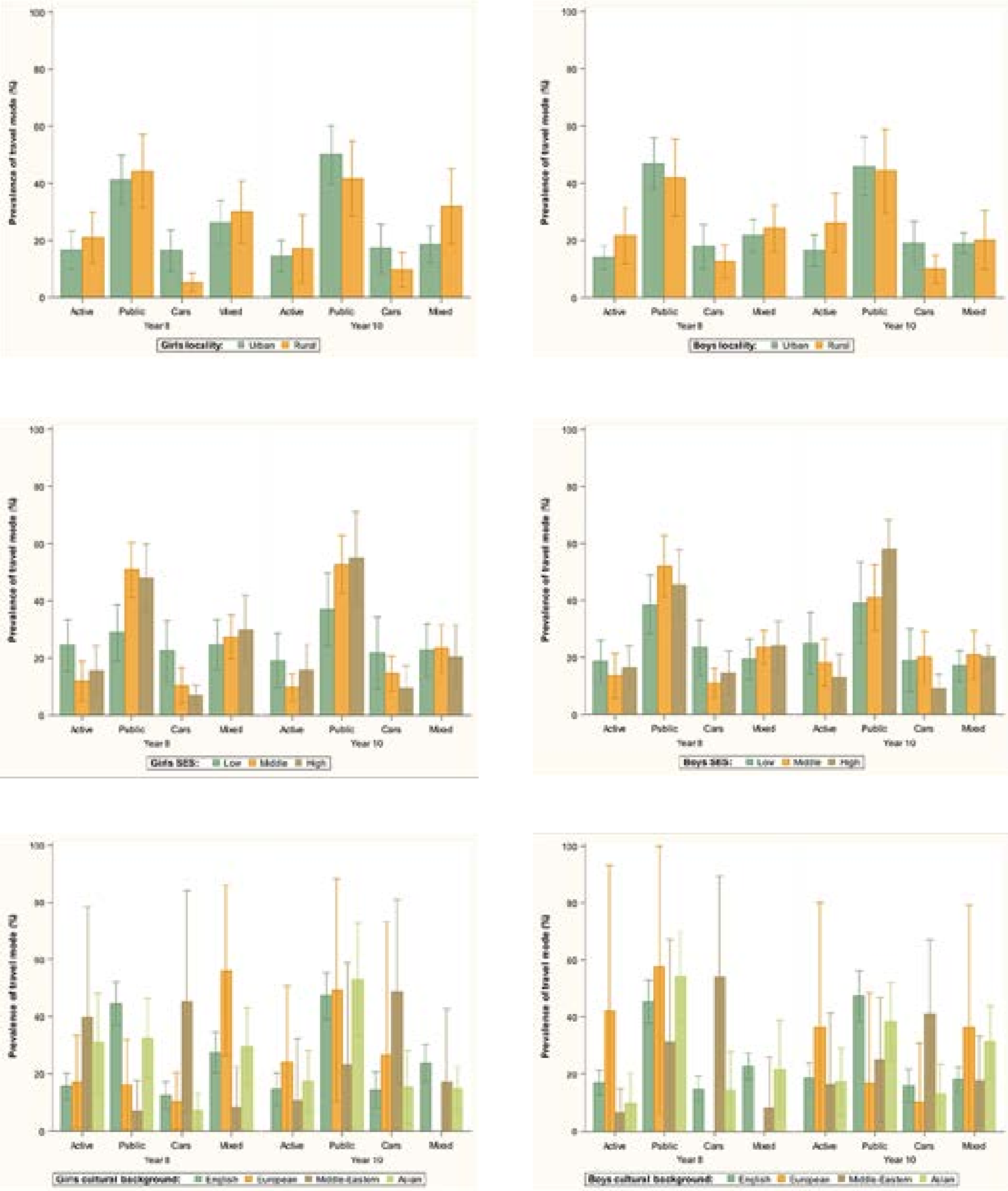
	Year 10							
	Active travel		Public transport		Car		Mixed modes	
GIRLS								
Locality								
Urban (ref)	14.4	(2.8)	49.9	(5.1)	17.1	(4.3)	18.6	(3.2)
Rural	16.9	(5.8)	41.5	(6.5)	9.5	(3.0)	**32.0**	**(6.5) a**
SES								
Low	19.0	(4.7)	**36.8**	**(6.3) a**	**21.6**	**(6.3) a**	22.6	(4.7)
Middle	9.6	(2.3)	52.6	(5.0)	14.5	(3.0)	23.3	(4.2)
High (ref)	15.6	(4.4)	54.8	(8.0)	9.3	(3.8)	20.3	(5.6)
Cultural background								
English-speaking (ref)	14.6	(2.8)	47.3	(4.1)	14.3	(3.1)	23.8	(3.2)
European	24.1	(13.2)	49.4	(19.3)	26.5	(23.2)	na	
Middle Eastern	10.7	(10.7)	23.3	(17.6)	**48.8**	**(16.0) a**	17.2	(12.7)
Asian	17.4	(5.3)	52.8	(9.8)	15.2	(6.3)	**14.6**	**(3.9) a**
BMI category								
Thin	**36.4**	**(10.7) a**	**29.2**	**(9.2) a**	13.7	(7.2)	20.7	(6.5)
Healthy weight (ref)	15.2	(2.7)	50.8	(3.9)	14.9	(3.1)	19.2	(3.1)
Overweight	10.7	(3.8)	46.1	(7.8)	17.8	(5.5)	25.4	(5.4)
Obese	5.1	(4.5)	38.1	(13.1)	11.5	(7.4)	**45.3**	**(13.0) a**
BOYS								
Locality								
Urban (ref)	16.3	(2.7)	45.8	(5.0)	19.0	(3.8)	18.9	(1.8)
Rural	26.1	(5.1)	44.1	(7.3)	**9.9**	**(2.4) a**	20.0	(5.1)
SES								
Low	25.0	(5.3)	**39.1**	**(7.1) a**	**18.9**	**(5.5) a**	17.0	(2.6)
Middle	18.2	(4.2)	**40.9**	**(5.8) a**	**20.1**	**(4.5) a**	20.9	(4.1)
High (ref)	13.0	(4.0)	57.8	(5.2)	9.0	(2.5)	20.2	(2.0)
Cultural background								
English-speaking (ref)	18.6	(2.7)	47.4	(4.4)	15.9	(2.9)	18.1	(2.2)
European	36.5	(21.6)	16.8	(15.6)	10.1	(10.3)	36.5	(21.2)
Middle Eastern	16.4	(12.3)	**25.0**	**(10.8) a**	**41.0**	**(12.9) a**	17.7	(7.7)
Asian	17.3	(5.9)	38.4	(6.8)	13.0	(5.2)	**31.3**	**(6.3) a**
BMI category								
Thin	**2.0**	**(2.0) a**	48.4	(10.9)	25.5	(9.7)	24.1	(6.9)
Healthy weight (ref)	19.2	(3.2)	46.8	(4.3)	14.4	(2.3)	19.7	(2.1)
Overweight	22.8	(5.0)	42.3	(7.5)	19.6	(5.4)	15.3	(4.2)
Obese	17.8	(7.4)	39.8	(9.7)	18.2	(7.3)	24.3	(9.4)

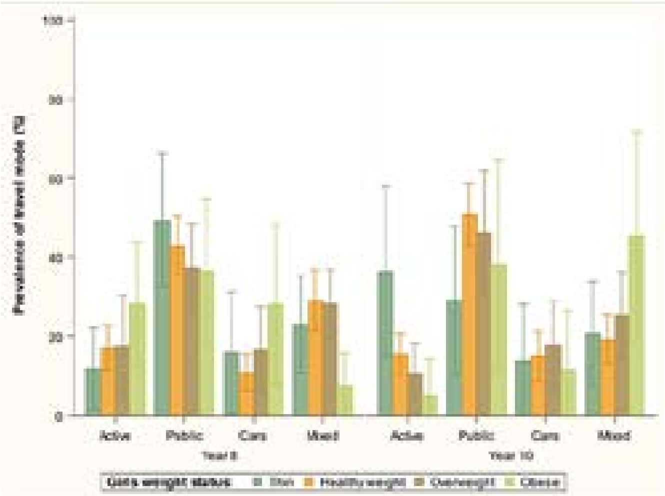
a *Indicates statistically significant difference at $P < 0.05$. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

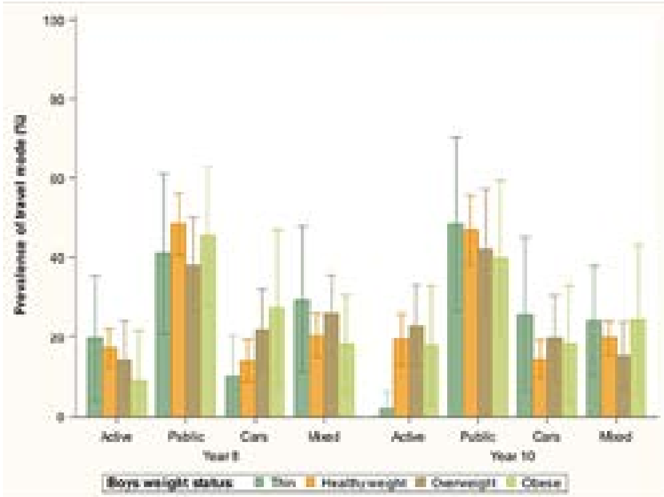
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 10.14 Prevalence of usual travel mode home from school, among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)




Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Year 8
Year 10
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of travel mode (%)
Active
Public
Cars
Mixed
Year 8
Year 10
Boys weight status
Thin
Healthy weight
Overweight
Obese

SUMMARY OF THE TRAVEL MODES TO AND FROM SCHOOL OF ADOLESCENTS IN SECONDARY SCHOOL

The table below summarises the travel modes to and from school in adolescents in secondary school.

Travel mode	Guideline or recommendation	SPANS cut point	Prevalence (%)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
TO SCHOOL					
Active	There are no specific guidelines	Walked, cycled, skateboarded or scootered to school, 5 days a week	14.4%	14.1%	**2015:** Overall, the proportion of adolescents using active travel to school was significantly higher among adolescents from rural areas **Change between 2010-15**: Overall, and within subgroups, there were no significant changes in the proportion of adolescents using active travel to school between 2010 and 2015
Public transport	There are no specific guidelines	Took a bus, train, ferry +/- walking to school, 5 days a week	39.3%	38.2%	**2015:** Overall, the proportion of adolescents using public transport to travel to school was significantly higher among adolescents from middle SES backgrounds and was significantly lower among adolescents from Middle Eastern cultural backgrounds **Change between 2010-15**: Overall, there were no significant changes in public transport to school between 2010 and 2015. Within subgroups, public transport to travel to school significantly increased among adolescents from middle SES backgrounds and significantly decreased among adolescents from European cultural backgrounds
Car	There are no specific guidelines	Driven by car to school, 5 days a week	18.5%	23.5%	**2015:** Overall, the proportion of adolescents driven to school was significantly lower among adolescents from rural areas and significantly higher among adolescents from Middle Eastern cultural backgrounds **Change between 2010-15**: Overall, there were no significant changes in car travel to school between 2010 and 2015. Within subgroups, car travel to school significantly increased only among adolescents from urban areas
Mixed modes	There are no specific guidelines	Used a mix of active travel, public transport and car to school, 5 days a week	27.8%	24.2%	**2015:** Overall, the proportion of adolescents using mixed modes of travel to school was significantly lower among adolescents from low and middle SES backgrounds **Change between 2010-15**: Overall, there were no significant changes in mixed modes of travel to school between 2010 and 2015. Within subgroups, mixed modes of travel to school significantly decreased only among adolescents from middle SES backgrounds

Travel mode	Guideline or recommendation	SPANS cut point	Prevalence (%)		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
HOME FROM SCHOOL					
Active	There are no specific guidelines	Walked, cycled, skateboarded or scootered home from school, 5 days a week	16.6%	17.0%	**2015:** Overall, there were no significant differences in the proportion of adolescents using active travel home from school from different socio-demographic backgrounds or BMI categories, between 2010 and 2015 **Change between 2010-15**: Overall, there were no significant changes in active travel home from school between 2010 and 2015. Within subgroups, active travel home from school significantly increased only among adolescents from European cultural backgrounds
Public transport	There are no specific guidelines	Took a bus, train, ferry +/- walking home from school, 5 days a week	47.9%	45.1%	**2015:** Overall, the proportion of adolescents using public transport to travel home from school was significantly lower among adolescents from low SES backgrounds, Middle Eastern cultural backgrounds and in the overweight BMI category **Change between 2010-15**: Overall, there were no significant changes in public transport home from school between 2010 and 2015. Within subgroups, public transport home from school significantly decreased only among adolescents from European cultural backgrounds
Car	There are no specific guidelines	Driven by car home from school, 5 days a week	9.5%	15.3%sig	**2015:** Overall, the proportion of adolescents driven home from school was significantly lower among adolescents from rural areas and was significantly higher among adolescents from low SES backgrounds, Middle Eastern cultural backgrounds and in the overweight BMI category **Change between 2010-15**: Overall, the proportion of adolescents driven home from school significantly increased between 2010 and 2015. Within subgroups, car travel home from school significantly increased among adolescents from urban areas, high SES backgrounds, English-speaking backgrounds and in the healthy weight BMI category
Mixed modes	There are no specific guidelines	Used a mix of active travel, public transport and car home from school, 5 days a week	26.0%	22.6%	**2015:** Overall, the proportion of adolescents using mixed modes of travel home from school was significantly lower among adolescents from Middle Eastern cultural backgrounds **Change between 2010-15**: Overall, and within subgroups, there were no significant changes in the proportion of adolescents using mixed modes of travel home from school, between 2010 and 2015

sig *Indicates statistically significant difference at $P < 0.05$.*

* *Comparisons are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

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CHAPTER 11: SEDENTARY BEHAVIOUR

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5 TO 16 YEARS

Median sitting time on a weekday (outside of school hours) was 3 hours 43 minutes

20%
of children met the recommended daily limits on screen time on weekend days

2015

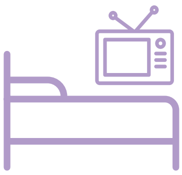
WEEKDAYS

- **Median sitting time on a weekday (outside of school hours) was 3 hours 43 minutes**
- **53% of children met the recommended daily limits on screen time on weekdays**
- Girls (58%) were more likely to meet the recommended daily limits on screen time on weekdays, compared with boys (48%)
- Children and adolescents from low SES backgrounds (41%) were less likely to meet the recommended daily limits on screen time on weekdays, compared with children and adolescents from high SES backgrounds (60%)
- Children and adolescents from Middle Eastern cultural backgrounds (46%) were less likely to meet the recommended daily limits on screen time on weekdays, compared with children and adolescents from English-speaking backgrounds (53%)
- Children and adolescents in the overweight (47%) and obese (42%) BMI categories were less likely to meet the recommended daily limits on screen time on weekdays, compared with children and adolescents in the healthy weight BMI category (55%)

WEEKENDS

- **Median sitting time on a weekend day was 6 hours 40 minutes**
- **20% of children met the recommended daily limits on screen time on weekend days**
- Girls (24%) were more likely to meet the recommended daily limits on screen time on weekend days, compared with boys (16%)
- Children and adolescents from low SES backgrounds (18%) were less likely to meet the recommended daily limits on screen time on weekend days, compared with children and adolescents from high SES backgrounds (22%)
- Children and adolescents from Asian cultural backgrounds (25%) were more likely to meet the recommended daily limits on screen time on weekend days, compared with children and adolescents from English-speaking backgrounds (20%)
- Children in the overweight (18%) and obese (16%) BMI categories were less likely to meet the recommended daily limits on screen time on weekend days, compared with children and adolescents in the healthy weight BMI category (21%)

54%
did not know the recommended daily limits on screen time



22%
of children and adolescents had a television in the bedroom

HOME SCREEN ENVIRONMENT

- **54% did not know the recommended daily limits on screen time**
- **22% of children and adolescents had a television in the bedroom**
- Children and adolescents from rural areas (28%) were more likely to have a television in the bedroom, compared with children and adolescents from urban areas (20%)
- Children and adolescents from low SES (31%) and middle SES backgrounds (26%) were more likely to have a television in the bedroom, compared with children and adolescents from high SES backgrounds (14%)
- Children and adolescents from European (14%) and from Asian cultural backgrounds (12%) were less likely to have a television in the bedroom, compared with children and adolescents from English-speaking backgrounds (23%)
- Children and adolescents in the overweight (26%) and obese (31%) BMI categories were more likely to have a television in the bedroom, compared with children and adolescents in the healthy weight BMI category (21%)
- **20% of parents rarely/never imposed screen time rules**

SIGNIFICANT CHANGES BETWEEN 2010 AND 2015

The proportion of children and adolescents with a TV in the bedroom has significantly decreased from 33% in 2010 to 22% in 2015. Decreases were observed among children and adolescents from:

- Urban areas (from 31% in 2010 to 20% in 2015)
- Low SES (from 44% in 2010 to 31% in 2015), middle SES (from 32% in 2010 to 26% in 2015) and high SES (from 22% in 2010 to 14% in 2015)
- English-speaking backgrounds (from 34% in 2010 to 23% in 2015) and European (from 26% in 2010 to 14% in 2015), Middle Eastern (from 29% in 2010 to 18% in 2015) and Asian (from 24% in 2010 to 12% in 2015) cultural backgrounds
- BMI categories for thin (from 27% in 2010 to 19% in 2015), healthy weight (from 31% in 2010 to 21% in 2015), overweight (from 37% in 2010 to 26% in 2015) and obese (from 45% in 2010 to 31% in 2015)

CONTEXT

Sedentary behaviours is the broad term applied to a range of activities undertaken whilst sitting or lying down. Sitting (or lying down) expends very little energy and is quantified or measured in metabolic expenditures (MET) ranging from 1–1.5 METs.[1] (One MET is equivalent to resting, or basal, metabolic rate; walking is about 3METS.) An understanding of sedentary behaviours adopted during childhood is important because sedentary behaviours have a tendency to track across the lifecourse.[2, 3]

Health concerns about prolonged sitting are based on research which shows sedentary behaviours are associated with increased risk of cardio-metabolic disease, all-cause mortality and a variety of physiological and psychological problems, independent of physical activity level.[4] Research shows that decreasing any time sitting is associated with lower health risk in children age 5-17 years. In particular, the research suggests that watching television for more than 2 hours a day is associated with reduced physical and psychosocial health, and that lowering time spent sitting among young people leads to reductions in body mass index.[5]

A common perception is that opportunities for children to sit have increased over time. This has led to concerns that children currently spend excessive amounts of time being sedentary and that they are more sedentary than previous generations.[6] This perception is intuitive, juxtaposed against children's declines and low levels of physical activity,[7] active transport[8] and independent mobility,[9, 10] as well as proliferation and use of screen devices.[11] However, the long-term surveillance data on children's sedentary behaviours is limited, so the issue of whether sedentary behaviour among children has increased remains equivocal.

Historically, information on children's sedentary behaviour was typically measured through one indictor - television viewing, which was a popular leisure time, sedentary activity for children in previous generations. In the 1950s when televisions began appearing in homes, the behavioural influence of violent television entertainment was considered a public health issue;[12] but more recently, the rationale to monitor children's television viewing is because it displaces time which could be spent in more active pursuits and exposes children to targeted advertising of non-nutritive foods - both drivers of child obesity.

Although television remains the dominant screen device among children, the rapid development and adoption of electronic media such as computers, smartphones, tablets, handheld gaming devices and screen games by the current generation of children has seen a shift in screen time media to devices which are mobile and used outside of the home environment.[6, 13, 14] For population surveillance, keeping abreast of screen innovations and concomitant health impacts remains a challenge.

Screen time is the primary contributor to the total time spent in sedentary behaviours among young people,[15] but children and adolescents also engage in many other sedentary activities that serve many important social and cognitive developmental needs, including homework, sitting around with friends, chatting, doing hobbies and reading.[16] Screen time is the most modifiable sedentary behaviour, but it is also important to gather information on other key sedentary behaviours to ascertain how young people are spending their leisure time and how these behaviours change over time. For SPANS, respondents reported the amount of time spent in 13 sedentary activities outside of school hours for each day of the week and 14 sedentary activities for each weekend day. For the analysis, the activities were reduced to five domains of sedentary behaviour:

Sitting domain	Sitting activities
Education	Using a computer for homework, being tutored, doing homework not on a computer
Travel	Passive travel – i.e., car, train, bus, ferry
Cultural	Included reading for fun, doing hobbies/crafts, playing/ practising a musical instrument
Social	Sitting around (chatting with friends, on the phone, 'chilling out')
Screen time (ST)	Watching TV/videos, using a computer for fun, and playing computer or video games (Nintendo, Xbox, PlayStation, Wii) playing on a smartphone or iPad/tablet

This chapter reports on the prevalence of sedentary behaviours on weekdays (outside of school hours) and weekend days; the presence of television in children's bedrooms; parental rules on screen time; meeting national screen time guidelines; and awareness of screen time guidelines stratified by year group, sex and, where appropriate, by socio-demographic characteristics and BMI category. Where available the 2010 prevalence estimates are included for comparison. The findings are presented separately for children in primary school and for adolescents in secondary school. The prevalence estimates (%) need to be interpreted along with their standard errors (SE) (or inter-quartile ranges [IQR]); a proportionally large standard error means a less precise estimate.

PRIMARY SCHOOL

A methodological factor to consider in the interpretation of the findings on children in primary school is the difference in respondent. Parents reported on behalf of their children in Years K, 2, 4, while children in Year 6 self-reported, which may reflect differences in the reported prevalence of indicators of sedentary behaviour between younger primary years and Year 6. The combined prevalence in primary school will reflect these differences in data collection methods.

WEEKDAY SITTING

The following section reports on the median total sitting time of children on a weekday, outside of school hours. When considering change in total sitting time between 2010 and 2015, it is important to remember that playing on a smartphone or iPad/tablet was added to the 2015 questionnaire, and is included in the total time for 2015. This may account for an increase in sitting time between 2010 and 2015.

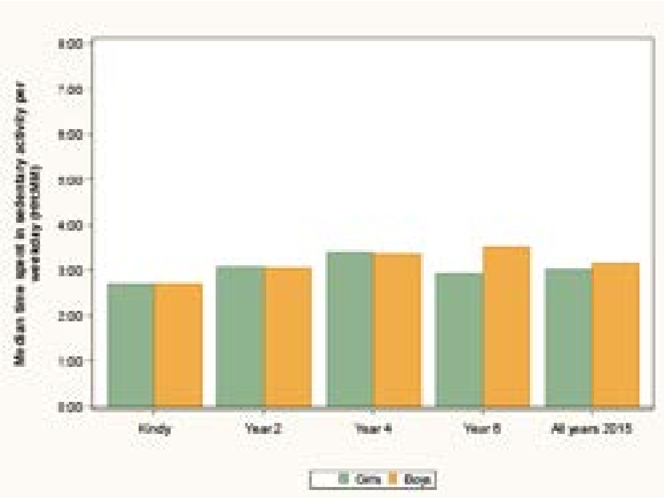
Table 11.1 and Figure 11.1 show the median daily time, in hours and minutes, that children in primary school spent sitting on a usual weekday, outside of school hours, by sex and year group in 2015, and in 2010 for comparison. Overall, children spent 3 hours and 5 minutes sitting on a usual weekday, in 2015. Total daily sitting time appeared to be broadly consistent between boys and girls within year groups in 2015 and increased 5 minutes overall and among girls, and 1 minute among boys between 2010 and 2015. The temporal increase may be due to the inclusion of the use of smartphones and tablets in the 2015 survey.

Table 11.1 Median total daily sitting time on a weekday, outside of school hours, among children in primary school by sex and year group in 2015, and in 2010 for comparison (hours: minutes, IQR)

	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
USUAL WEEKDAY												
All	2:42	(2:21)	3:03	(2:22)	3:23	(2:24)	3:15	(3:11)	3:05	(2:32)	3:10	(2:29)
Girls	2:42	(2:26)	3:03	(2:14)	3:23	(2:14)	2:55	(2:55)	3:01	(2:24)	3:06	(2:24)
Boys	2:42	(2:16)	3:02	(2:35)	3:21	(2:33)	3:30	(3:22)	3:10	(2:41)	3:11	(2:32)

Note: No significance testing was conducted.

Figure 11.1 Median total daily sitting time on a weekday, outside of school hours, among children in primary school by sex and year group in 2015 (hours: minutes)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that the median total daily sitting time on a weekday (outside of school hours) among children in primary school was approximately 3 hours. Table 11.2 and Figure 11.2 show the median hours children spent sitting, outside of school hours, on a usual weekday by socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison. Differences between socio-demographic characteristics were not statistically tested.

Locality

2015: Overall, total daily sitting time was broadly consistent between children from rural and urban areas.

Change between 2010-2015: There was little change in total daily sitting time among children from urban and among children in rural areas between 2010 and 2015.

Socio-economic status

2015: Overall, total daily sitting time was slightly higher among children from low SES background (3:35 hours), than children from middle (2:59 hours) and high (2:57 hours) SES backgrounds.

Change between 2010-2015: There appeared to be little change in total daily sitting time among children from different SES background between 2010 and 2015.

Cultural background

2015: Overall, total daily sitting time was higher among children from Middle Eastern cultural backgrounds (3:55 hours), than children from English-speaking backgrounds and Asian and European cultural backgrounds (3:02-3:09 hours).

Change between 2010-2015: Overall, total daily sitting time decreased among children from English-speaking (2 minutes), Middle Eastern (9 minutes) and Asian (16 minutes) cultural backgrounds; and increased among children from European (9 minutes) cultural backgrounds, between 2010 and 2015.

Weight status

2015: Overall, total daily sitting time was higher among children in the overweight (3:19 hours) and obese (3:51 hours) BMI categories, than children in the thin (2:59 hours) and healthy weight (2:59 hours) BMI categories.

Change between 2010-2015: Overall, there was little change in total daily sitting time among children in the thin, healthy weight and overweight BMI categories; but there was a 9-minute increase among children in the obese BMI category, between 2010 and 2015.

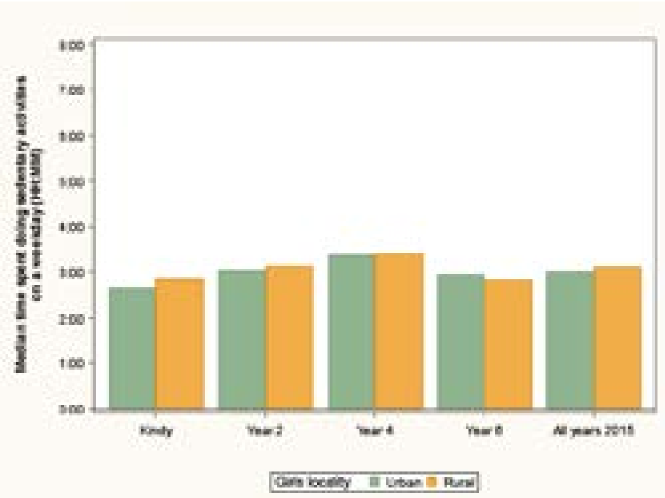
Table 11.2 Median total daily sitting time on a weekday, outside of school hours, among primary school children by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (hours: minutes, IQR)

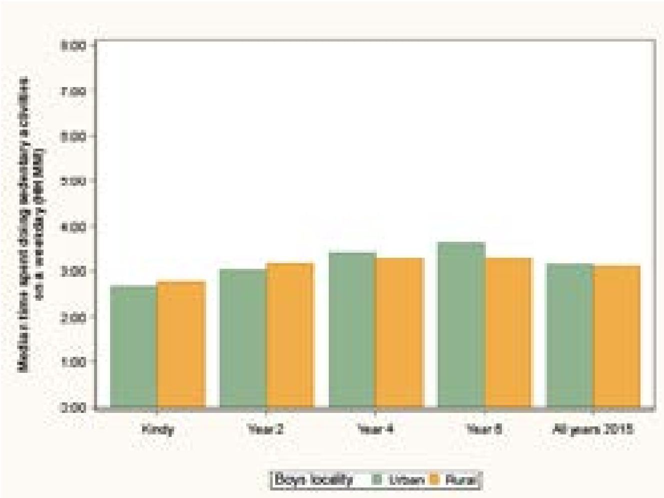
	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
ALL												
Locality												
Urban (ref)	2:40	(2:19)	3:01	(2:25)	3:24	(2:25)	3:16	(3:05)	3:05	(2:33)	3:10	(2:29)
Rural	2:50	(2:17)	3:09	(2:05)	3:20	(2:19)	3:01	(3:23)	3:06	(2:28)	3:00	(2:24)
SES												
Low	3:14	(2:56)	3:29	(3:04)	3:53	(3:11)	3:46	(3:31)	3:35	(3:08)	3:27	(2:43)
Middle	2:38	(2:25)	3:01	(2:16)	3:23	(2:20)	2:50	(2:57)	2:59	(2:27)	3:03	(2:23)
High (ref)	2:38	(1:54)	2:56	(2:04)	3:14	(2:09)	3:16	(2:50)	2:57	(2:15)	2:56	(2:10)
Cultural background												
English-speaking (ref)	2:41	(2:14)	3:04	(2:18)	3:21	(2:19)	3:11	(3:13)	3:04	(2:28)	3:06	(2:23)
European	2:45	(2:37)	2:48	(1:42)	3:41	(2:12)	2:40	(1:54)	3:02	(2:07)	2:53	(2:26)
Middle Eastern	3:14	(4:08)	3:42	(2:47)	4:24	(3:17)	3:28	(3:35)	3:55	(3:32)	4:04	(3:10)
Asian	2:53	(2:21)	2:41	(2:20)	3:23	(2:46)	3:45	(3:03)	3:09	(2:33)	3:25	(2:47)
BMI category												
Thin	2:59	(1:45)	2:46	(2:23)	3:00	(2:40)	3:15	(2:33)	2:59	(2:17)	2:58	(2:22)
Healthy weight (ref)	2:39	(2:20)	3:00	(2:20)	3:20	(2:20)	3:05	(3:02)	2:59	(2:29)	3:06	(2:26)
Overweight	2:56	(2:12)	3:09	(2:26)	3:33	(2:15)	3:30	(3:43)	3:19	(2:50)	3:20	(2:34)
Obese	3:17	(2:55)	3:55	(2:21)	3:51	(2:51)	4:06	(3:55)	3:51	(3:04)	3:20	(2:34)
GIRLS												
Locality												
Urban (ref)	2:39	(2:25)	3:01	(2:15)	3:23	(2:17)	2:56	(2:43)	2:59	(2:24)	3:06	(2:23)
Rural	2:51	(2:20)	3:08	(2:09)	3:24	(2:10)	2:49	(3:32)	3:06	(2:26)	3:06	(2:18)
SES												
Low	3:13	(2:55)	3:21	(2:43)	4:07	(3:00)	3:32	(3:13)	3:33	(3:02)	3:30	(2:51)
Middle	2:37	(2:23)	3:00	(2:17)	3:19	(2:13)	2:40	(2:40)	2:54	(2:24)	2:58	(2:10)
High (ref)	2:39	(2:07)	2:55	(1:54)	3:15	(1:54)	2:50	(2:40)	2:53	(2:11)	2:48	(2:02)
Cultural background												
English-speaking (ref)	2:41	(2:18)	3:02	(2:09)	3:22	(2:11)	2:52	(2:57)	2:59	(2:24)	3:05	(2:14)
European	3:30	(3:01)	2:51	(2:21)	3:35	(1:38)	2:53	(1:14)	3:29	(2:06)	3:05	(2:24)
Middle Eastern	3:01	(2:52)	3:29	(2:38)	4:50	(2:47)	3:28	(2:09)	3:45	(3:00)	4:08	(3:12)
Asian	2:50	(2:29)	2:25	(2:27)	3:19	(1:58)	3:36	(2:31)	3:08	(2:24)	3:10	(2:42)
BMI category												
Thin	2:52	(1:37)	2:34	(2:03)	2:34	(1:46)	2:56	(2:07)	2:49	(2:01)	2:46	(2:06)
Healthy weight (ref)	2:38	(2:31)	3:01	(2:08)	3:22	(2:09)	2:51	(2:53)	2:57	(2:28)	3:04	(2:25)
Overweight	2:56	(2:23)	3:11	(2:25)	3:31	(2:09)	2:39	(2:47)	3:13	(2:36)	3:14	(2:24)
Obese	3:20	(2:43)	3:54	(2:30)	3:46	(2:35)	3:47	(3:21)	3:46	(2:54)	3:19	(2:23)

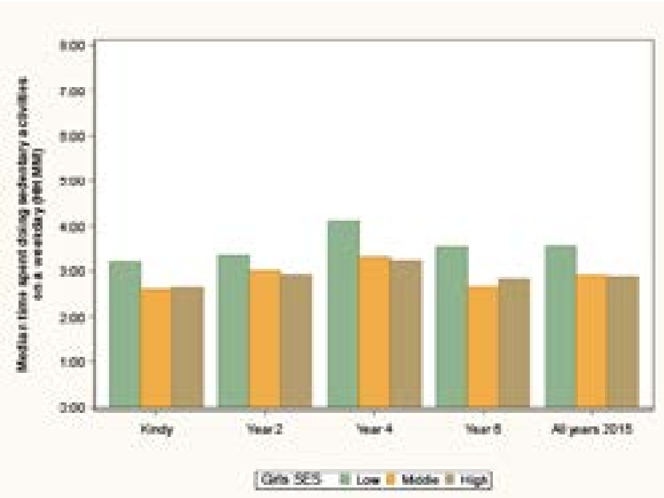
	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
BOYS						
Locality						
Urban (ref)	2:40 (2:10)	3:01 (2:43)	3:25 (2:38)	3:37 (3:20)	3:10 (2:43)	3:13 (2:32)
Rural	2:46 (2:15)	3:11 (1:57)	3:16 (2:29)	3:17 (3:13)	3:07 (2:31)	2:56 (2:23)
SES						
Low	3:13 (2:59)	3:35 (3:12)	3:36 (3:32)	4:08 (4:27)	3:38 (3:18)	3:23 (2:37)
Middle	2:40 (2:21)	3:01 (2:34)	3:28 (2:31)	3:10 (3:03)	3:04 (2:31)	3:07 (2:30)
High (ref)	2:37 (1:42)	2:55 (2:15)	3:13 (2:21)	3:36 (3:06)	2:59 (2:23)	3:03 (2:19)
Cultural background						
English-speaking (ref)	2:42 (2:08)	3:07 (2:33)	3:20 (2:25)	3:28 (3:20)	3:09 (2:35)	3:07 (2:25)
European	2:33 (1:32)	2:47 (1:23)	3:48 (3:04)	2:17 (2:13)	2:48 (1:58)	2:41 (1:11)
Middle Eastern	4:04 (5:07)	4:22 (4:07)	3:53 (3:28)	3:30 (4:40)	4:16 (4:17)	3:57 (3:09)
Asian	2:57 (2:00)	2:45 (2:12)	3:38 (4:05)	4:17 (4:57)	3:07 (2:50)	3:40 (2:51)
BMI category						
Thin	3:00 (2:03)	3:00 (3:03)	3:18 (2:46)	3:57 (3:58)	3:12 (2:45)	3:12 (2:26)
Healthy weight (ref)	2:41 (2:07)	2:59 (2:36)	3:18 (2:27)	3:19 (3:15)	3:01 (2:32)	3:06 (2:28)
Overweight	2:53 (1:37)	3:00 (2:34)	3:35 (2:41)	3:56 (4:02)	3:25 (3:01)	3:27 (2:46)
Obese	2:32 (2:57)	3:48 (2:18)	3:51 (3:36)	4:11 (5:28)	3:52 (3:22)	3:22 (2:44)

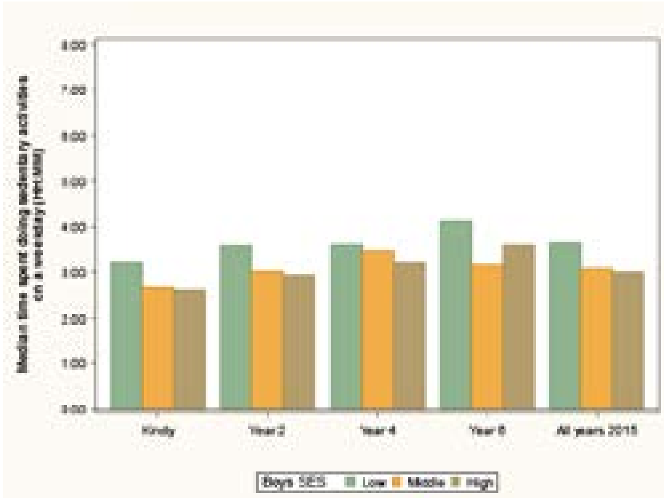
Note: No significance testing was conducted.

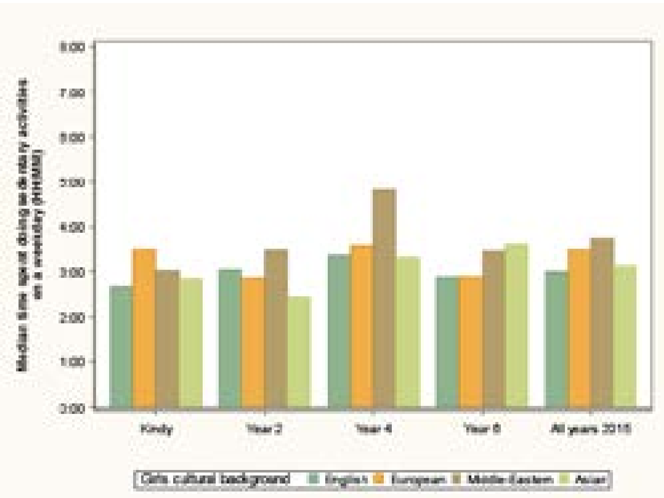
Figure 11.2 Median time spent sitting on a weekday, outside of school hours, among primary school children by sex, year group, socio-demographic characteristics, and BMI category in 2015 (hours: minutes IQR).

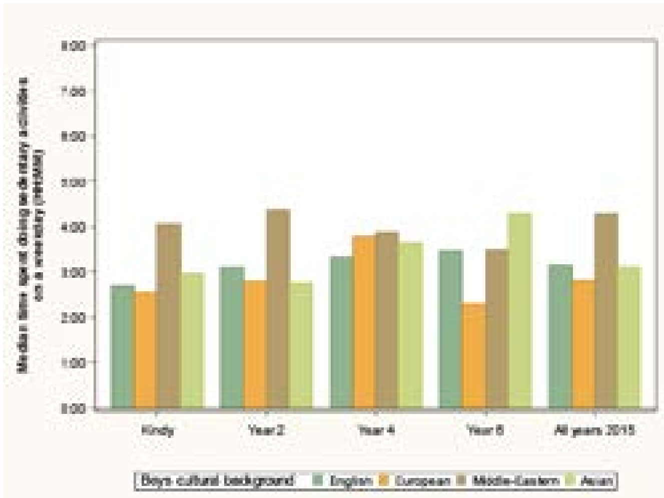


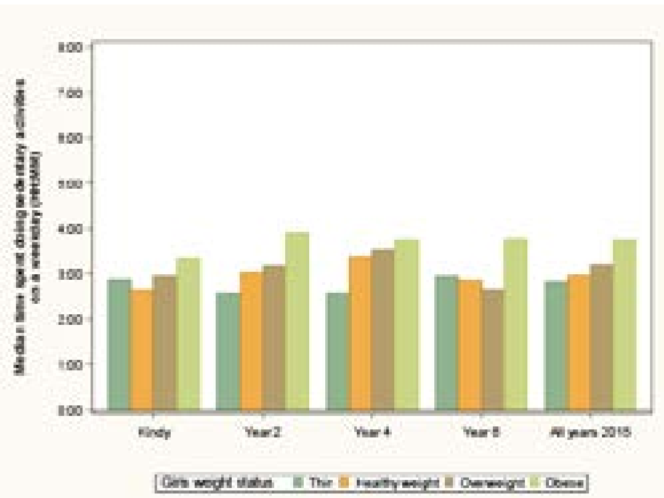


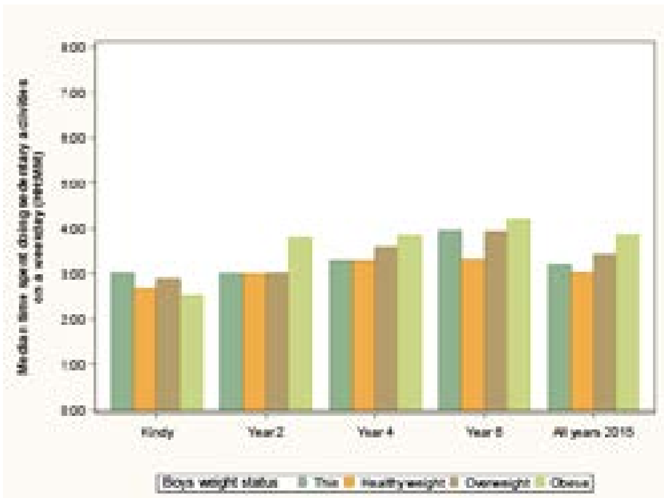

Median time spent doing sedentary activities on a weekday (HH:MM)
Kindy
Year 2
Year 4
All years 2015
Girls SES
Low
Middle
High


Median time spent doing sedentary activities on a weekday (HH:MM)
Kindy
Year 2
Year 4
All years 2015
Boys SES
Low
Middle
High


Median time spent doing sedentary activities on a weekday (HH:MM)
Kindy
Year 2
Year 4
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Median time spent doing sedentary activities on a weekday (HH:MM)
Kindy
Year 2
Year 4
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Median time spent doing sedentary activities on a weekday (HH:MM)
Kindy
Year 2
Year 4
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Median time spent doing sedentary activities on a weekday (HH:MM)
Kindy
Year 2
Year 4
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

DOMAINS OF SEDENTARY BEHAVIOUR

While watching television is the most popular sitting activity among children, there are many other activities that children do while sitting or lying down.[17] Many of these activities serve important social and cognitive developmental skills such as reading, sitting with friends, listening or playing music, hobbies and crafts, homework, religious and cultural activities and passive transportation.[17]

Measuring total sitting time is difficult; objective measures (e.g., inclinometers, accelerometers) provide no contextual information and self-report is prone to recall and social biases. The benefit of self-report is that it can provide contextual information on different sedentary activities. For SPANS, respondents reported the amount of time spent in 13 sedentary activities for each day of the week, outside of school hours, and 14 sedentary activities for each weekend day. For the analysis, the activities were categorised into five separate domains of sedentary behaviour; educational, passive travel, cultural, social and screen time activities.

Monitoring specific domains of sitting is important to understand the types of sitting children engage in and how this may change over time. In 2015, information on time spent playing on a smartphone or iPad/tablet was added to the questionnaire because of the increased uptake and use of these screen devices among children.[6]

Table 11.3 and Figure 11.3 show the median daily time, in hours and minutes, that children spent in each domain of sedentary behaviour on a usual weekday, outside of school hours, by sex and year group in 2015, and in 2010 for comparison. Screen time has been reported with and without smartphone and/or tablet use. Overall, children spent 30 minutes sitting in cultural activities, 19 minutes in educational activities, 1 hour and 27 minutes on screen time hours (including smartphone and tablet use), 1 hour on screen time, excluding smartphone and tablet use, 0 minutes on social activities and 10 minutes on passive travel in 2015. Sitting time in each domain appeared to be broadly consistent between boys and girls within year groups except screen time, which was higher among boys.

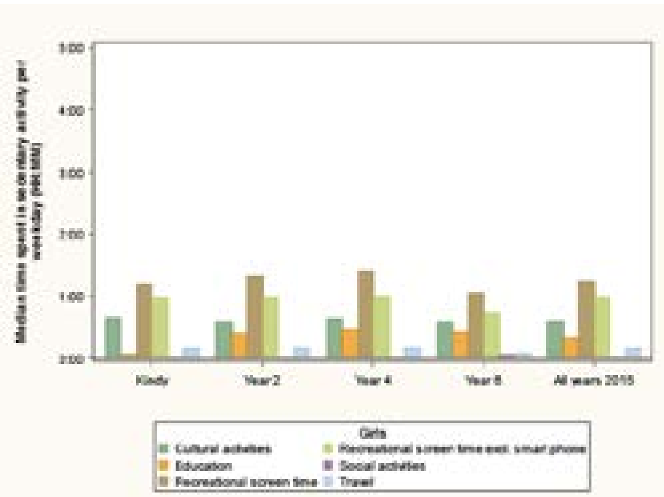
Overall, there was little change in the time spent sitting in the different domains, with the exception of screen time that excluded smartphone and tablet use, which decreased 30 minutes between 2010 and 2015. The 27-minute difference between the two screen time indicators (with and without smartphone and tablet) in 2015 may reflect this change.

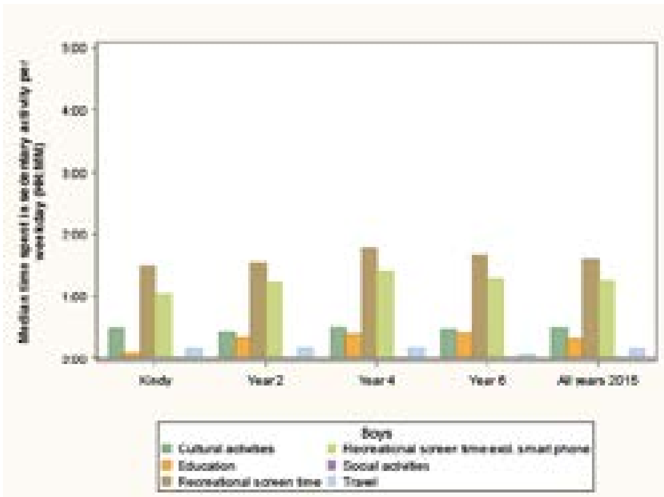
Table 11.3 Median time spent in each domain of sedentary behaviour on a weekday (outside of school hours) among children in primary school by sex and year group in 2015, and in 2010 for comparison (hours: minutes, IQR)

Weekday	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
ALL												
Cultural	0:30	(0:49)	0:30	(0:47)	0:34	(0:46)	0:30	(0:55)	0:30	(0:48)	0:29	(0:49)
Education	0:05	(0:19)	0:21	(0:27)	0:24	(0:31)	0:24	(0:38)	0:19	(0:30)	0:22	(0:34)
Screen time [a]	1:23	(1:25)	1:28	(1:39)	1:30	(1:46)	1:19	(2:01)	1:27	(1:44)	na	
Screen time [b]	0:59	(1:26)	1:05	(1:29)	1:12	(1:24)	0:59	(1:29)	1:00	(1:29)	1:30	(1:40)
Social	0:00	(0:00)	0:00	(0:05)	0:00	(0:09)	0:00	(0:16)	0:00	(0:10)	0:00	(0:10)
Travel	0:10	(0:25)	0:10	(0:29)	0:10	(0:30)	0:05	(0:20)	0:10	(0:27)	0:10	(0:25)
GIRLS												
Cultural	0:39	(0:57)	0:35	(0:42)	0:38	(0:51)	0:35	(0:56)	0:36	(0:54)	0:30	(0:45)
Education	0:04	(0:18)	0:23	(0:28)	0:27	(0:30)	0:25	(0:37)	0:19	(0:31)	0:23	(0:33)
Screen time [a]	1:11	(1:20)	1:19	(1:29)	1:24	(1:38)	1:03	(1:35)	1:14	(1:34)	na	
Screen time [b]	0:59	(1:07)	0:59	(1:28)	1:00	(1:28)	0:44	(1:07)	1:00	(1:17)	1:24	(1:32)
Social	0:00	(0:00)	0:00	(0:10)	0:00	(0:12)	0:03	(0:19)	0:00	(0:12)	0:00	(0:14)
Travel	0:10	(0:30)	0:10	(0:29)	0:10	(0:30)	0:05	(0:20)	0:10	(0:28)	0:10	(0:25)
BOYS												
Cultural	0:28	(0:49)	0:24	(0:39)	0:30	(0:47)	0:27	(0:55)	0:29	(0:47)	0:22	(0:44)
Education	0:06	(0:19)	0:20	(0:24)	0:23	(0:30)	0:23	(0:38)	0:19	(0:30)	0:21	(0:34)
Screen time [a]	1:30	(1:24)	1:33	(1:46)	1:46	(1:52)	1:40	(2:21)	1:36	(1:51)	na	
Screen time [b]	1:02	(1:21)	1:13	(1:35)	1:24	(1:33)	1:16	(1:53)	1:15	(1:29)	1:41	(1:47)
Social	0:00	(0:00)	0:00	(0:00)	0:00	(0:04)	0:00	(0:12)	0:00	(0:08)	0:00	(0:06)
Travel	0:09	(0:21)	0:10	(0:29)	0:10	(0:30)	0:04	(0:19)	0:09	(0:26)	0:09	(0:24)

Note: No significance testing was conducted.
[a] = includes smartphone, tablet.
[b] = excludes smartphone, tablet.
na = not available.

Figure 11.3 Median time (hours/day) spent in each domain of sedentary behaviour on a usual weekday outside of school hours among children in primary school by sex and year group in 2015





WEEKEND DAY

The following section reports on the median total sitting time of children on a weekend day. When considering change in total sitting time between 2010 and 2015, it is important to remember that playing on a smartphone or iPad/tablet was added to the 2015 questionnaire, and is included in the total time for 2015. This may account for an increase in sitting time between 2010 and 2015.

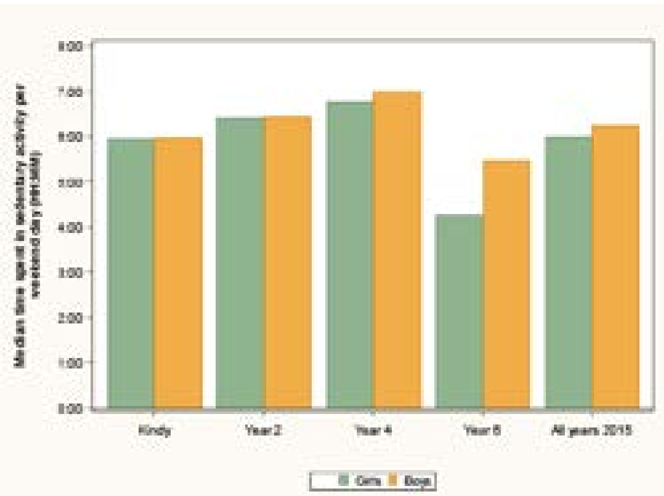
Table 11.4 and Figure 11.4 show the median daily time, in hours and minutes, that children in primary school spent sitting on a weekend day, by sex and year group in 2015, and in 2010 for comparison. Overall, children spent 6 hours and 4 minutes sitting on a weekend day in 2015. Total sitting time appeared to be broadly consistent between younger boys and girls within year groups, with boys overall spending 15 minutes more in total sitting time compared with girls. Overall, total daily sitting time increased 14 minutes, and by 16 minutes among girls and 19 minutes among boys. The temporal increase may be due to the inclusion of the use of smartphones and tablets in the 2015 survey.

Table 11.4 Median total daily sitting time on a weekend day, outside of school hours, among children in primary school by sex and year group in 2015, and in 2010 for comparison (hours: minutes, IQR)

	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
USUAL WEEKEND DAY												
All	5:57	(4:18)	6:28	(4:39)	6:56	(4:43)	4:46	(5:12)	6:04	(4:40)	5:50	(4:12)
Girls	5:57	(4:29)	6:25	(4:29)	6:45	(4:57)	4:15	(4:42)	5:59	(4:39)	5:43	(4:12)
Boys	5:58	(3:54)	6:26	(4:49)	6:59	(4:35)	5:28	(5:26)	6:14	(4:48)	5:55	(4:16)

Note: No significance testing was conducted.

Figure 11.4 Median total sitting time on a weekend day among children in primary school by sex and year group in 2015 (hours: minutes)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that the median total daily sitting time on a weekend day among children was approximately 6 hours. Table 11.5 and Figure 11.5 show the median hours children spent sitting on a weekend day by socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, total daily sitting time was 22 minutes higher among children from rural areas, compared with children from urban areas.

Change between 2010-2015: Total daily sitting time increased 23 minutes among children in urban areas and 22 minutes among children in rural areas between 2010 and 2015.

Socio-economic status

2015: Overall, total daily sitting time was higher among children from low SES background (6:43 hours), than children from middle (6:00 hours) and high (5:57 hours) SES backgrounds.

Change between 2010-2015: Total daily sitting time increased 44 minutes among children from low SES backgrounds, 25 minutes among children from middle SES backgrounds, and 7 minutes among children from high SES backgrounds between 2010 and 2015.

Cultural background

2015: Overall, total daily sitting time was higher among children from Middle Eastern cultural backgrounds (7:01 hours), than children from English-speaking (6:08 hours) and Asian (5:44 hours) and European (5:58 hours) cultural backgrounds.

Change between 2010-2015: Overall, total daily sitting time decreased 27 minutes among children from Asian cultural backgrounds and increased among children from English-speaking (24 minutes) European (50 minutes) and Middle Eastern (34 minutes) cultural backgrounds, between 2010 and 2015.

Weight status

2015: Overall, total daily sitting time was highest among children in the obese (7:00 hours) BMI category and was lower among children in the thin (6:14 hours), overweight (6:13 hours) and healthy weight (5:59 hours) BMI categories.

Change between 2010-2015: Overall, total daily sitting time increased among children in the thin (54 minutes), healthy weight (16 minutes), overweight (4 minutes) and obese (46 minutes) BMI categories, between 2010 and 2015.

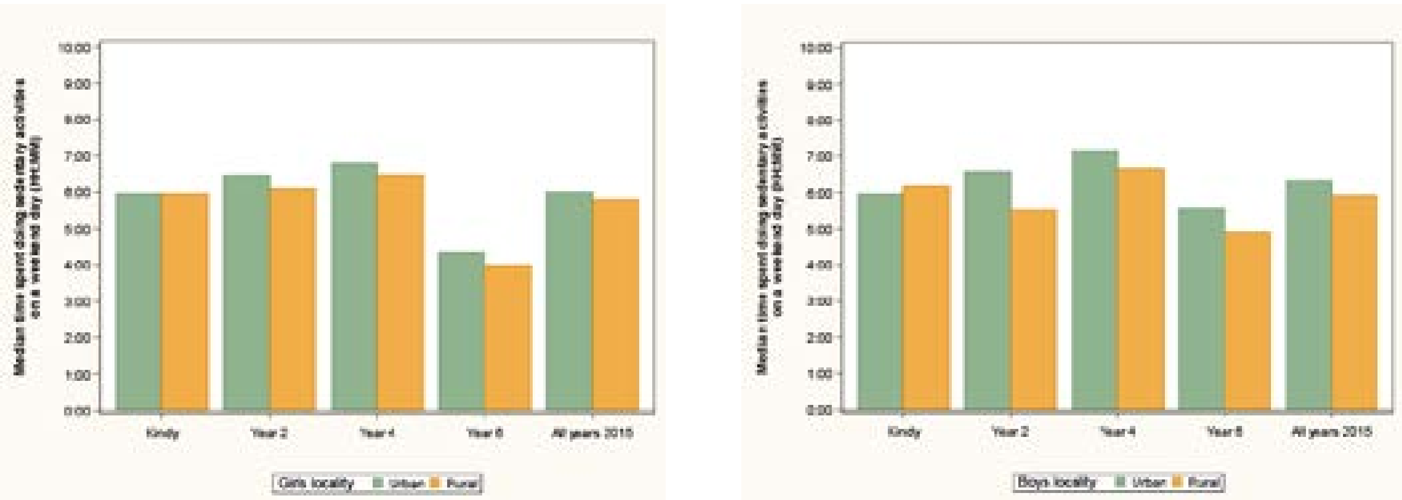
Table 11.5 Median total daily sitting time on a weekend day among primary school children by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (hours: minutes, IQR)

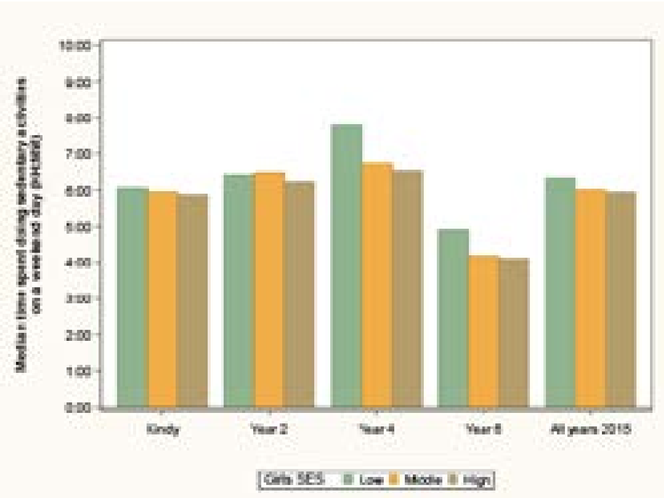
	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
ALL												
Locality												
Urban (ref)	5:57	(4:18)	6:29	(4:32)	6:58	(4:34)	4:51	(5:07)	6:13	(4:49)	5:50	(4:15)
Rural	5:59	(4:15)	5:54	(4:16)	6:36	(4:56)	4:23	(5:12)	5:51	(4:44)	5:29	(4:17)
SES												
Low	6:18	(5:10)	6:50	(5:18)	7:44	(5:41)	5:38	(6:42)	6:43	(5:53)	5:59	(5:11)
Middle	5:58	(4:07)	6:28	(4:46)	6:57	(4:41)	4:25	(4:55)	6:00	(4:41)	5:35	(4:11)
High (ref)	5:47	(3:56)	6:13	(3:58)	6:30	(4:13)	4:44	(4:46)	5:57	(4:11)	5:50	(3:47)
Cultural background												
English-speaking (ref)	6:00	(4:05)	6:28	(4:32)	6:57	(4:40)	4:37	(5:10)	6:08	(4:35)	5:44	(4:07)
European	7:02	(4:25)	5:36	(3:46)	8:19	(6:39)	3:00	(3:19)	5:58	(5:20)	5:08	(4:10)
Middle Eastern	5:19	(4:53)	7:36	(5:08)	8:29	(5:29)	6:31	(7:10)	7:01	(5:43)	6:27	(5:20)
Asian	5:11	(4:49)	5:50	(3:45)	6:19	(3:32)	5:31	(3:35)	5:44	(4:08)	6:11	(4:57)
BMI category												
Thin	6:16	(4:15)	6:31	(3:55)	6:46	(4:47)	4:40	(5:07)	6:14	(4:28)	5:20	(3:58)
Healthy weight (ref)	5:56	(4:11)	6:14	(4:28)	6:49	(4:23)	4:34	(5:03)	5:59	(4:33)	5:43	(4:14)
Overweight	5:55	(4:07)	6:36	(5:10)	7:11	(5:43)	5:18	(5:02)	6:13	(5:05)	6:09	(4:21)
Obese	6:33	(5:38)	7:26	(4:10)	7:38	(4:51)	4:57	(6:42)	7:00	(5:27)	6:14	(4:55)
GIRLS												
Locality												
Urban (ref)	5:57	(4:30)	6:28	(4:24)	6:47	(4:49)	4:20	(4:30)	6:00	(4:34)	5:43	(4:12)
Rural	5:57	(4:26)	6:05	(4:23)	6:29	(5:09)	3:59	(5:19)	5:48	(4:49)	5:33	(4:10)
SES												
Low	6:03	(5:43)	6:25	(4:14)	7:47	(6:02)	4:55	(5:15)	6:20	(5:42)	6:00	(5:13)
Middle	5:57	(4:40)	6:29	(4:31)	6:43	(4:41)	4:10	(4:53)	6:00	(4:57)	5:28	(3:49)
High (ref)	5:51	(3:39)	6:12	(3:47)	6:32	(4:24)	4:05	(4:09)	5:56	(4:12)	5:43	(3:49)
Cultural background												
English-speaking (ref)	5:59	(4:14)	6:28	(4:21)	6:53	(4:58)	4:11	(4:46)	6:00	(4:39)	5:39	(4:03)
European	9:14	(5:51)	5:57	(2:42)	6:32	(5:00)	2:31	(3:10)	5:58	(5:22)	5:11	(5:07)
Middle Eastern	4:34	(2:28)	6:25	(5:11)	8:55	(5:12)	4:53	(4:49)	6:20	(4:58)	6:15	(5:07)
Asian	5:10	(5:23)	5:41	(3:39)	6:23	(2:54)	5:20	(3:05)	5:44	(4:12)	5:40	(4:40)
BMI category												
Thin	6:09	(5:03)	5:59	(3:28)	6:40	(3:30)	4:15	(3:35)	5:58	(4:11)	4:55	(4:17)
Healthy weight (ref)	5:49	(4:29)	6:23	(4:13)	6:30	(4:39)	4:13	(4:32)	5:58	(4:37)	5:38	(4:26)
Overweight	6:04	(4:41)	6:15	(4:10)	7:29	(5:37)	4:25	(5:14)	6:13	(5:17)	5:57	(4:00)
Obese	6:19	(5:32)	7:25	(4:57)	7:06	(4:25)	4:36	(5:36)	6:42	(5:08)	5:57	(3:38)

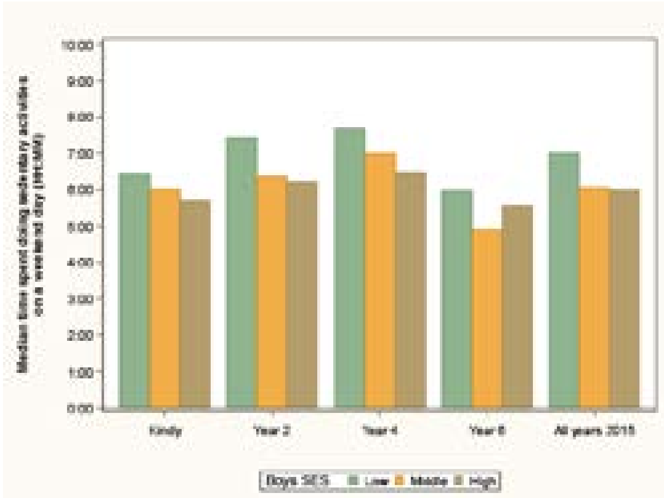
	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
BOYS						
Locality						
Urban (ref)	5:57 (3:49)	6:35 (5:04)	7:10 (4:30)	5:34 (5:43)	6:20 (4:47)	5:59 (4:24)
Rural	6:10 (4:14)	5:32 (4:03)	6:40 (4:23)	4:55 (4:52)	5:55 (4:35)	5:20 (4:10)
SES						
Low	6:27 (4:29)	7:25 (5:47)	7:41 (4:56)	5:59 (7:30)	7:00 (5:47)	5:59 (4:55)
Middle	6:00 (3:31)	6:23 (4:36)	6:59 (4:54)	4:54 (4:45)	6:02 (4:25)	5:49 (4:23)
High (ref)	5:42 (3:56)	6:12 (4:13)	6:29 (4:06)	5:35 (5:11)	5:59 (4:22)	5:56 (3:49)
Cultural background						
English-speaking (ref)	6:02 (3:46)	6:26 (4:39)	6:58 (4:18)	5:17 (5:29)	6:14 (4:37)	5:49 (4:01)
European	6:14 (2:54)	4:30 (4:18)	9:35 (8:53)	5:18 (2:49)	5:40 (5:24)	4:56 (3:33)
Middle Eastern	6:12 (5:07)	9:52 (5:56)	7:23 (5:48)	8:06 (8:33)	8:25 (6:31)	6:55 (6:02)
Asian	5:13 (3:15)	6:02 (4:48)	6:00 (5:32)	6:05 (4:48)	5:43 (4:25)	6:44 (5:04)
BMI category						
Thin	6:17 (4:31)	7:04 (4:47)	6:49 (5:30)	6:56 (6:04)	6:56 (4:53)	5:48 (3:46)
Healthy weight (ref)	5:57 (3:58)	6:00 (4:27)	6:58 (4:08)	5:07 (5:35)	6:02 (4:30)	5:42 (4:13)
Overweight	5:47 (3:37)	6:55 (5:28)	6:35 (5:37)	5:41 (4:41)	6:10 (4:53)	6:16 (4:47)
Obese	6:48 (5:28)	7:24 (4:04)	8:06 (5:25)	5:33 (11:36)	7:17 (5:46)	6:35 (6:00)

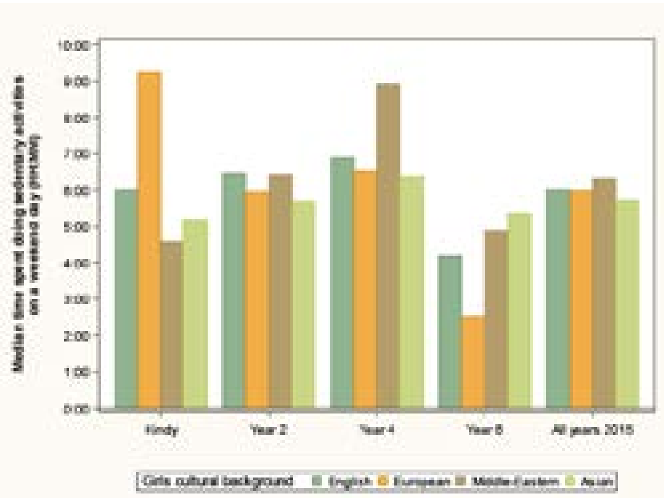
Note: No significance testing was conducted.

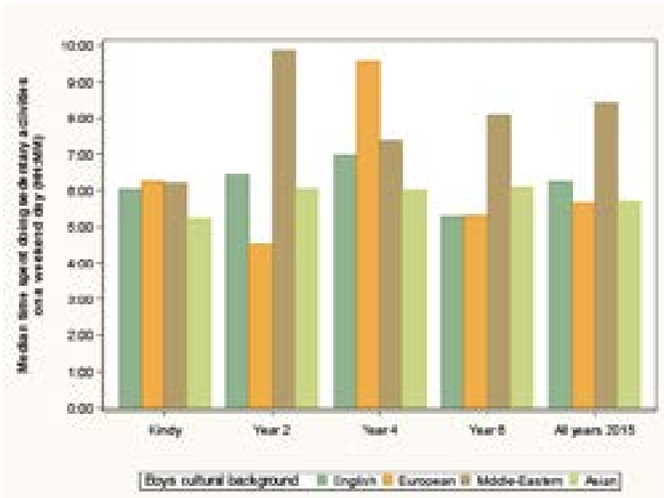
Figure 11.5 Median total daily sitting time on a weekend day among primary school children by sex, year group, socio-demographic characteristics and BMI category in 2015 (hours: minutes)

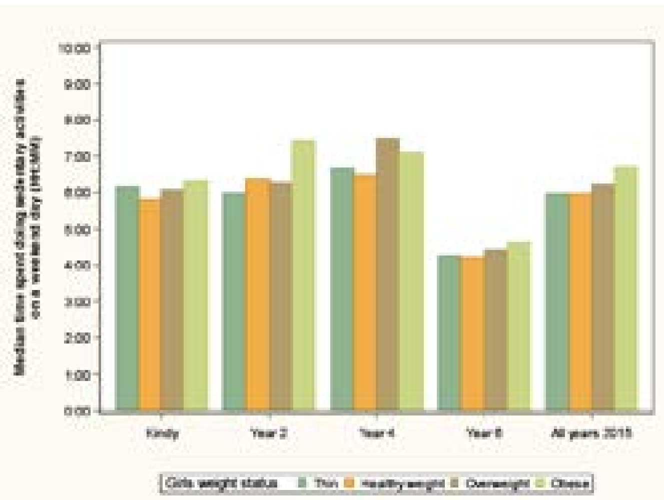


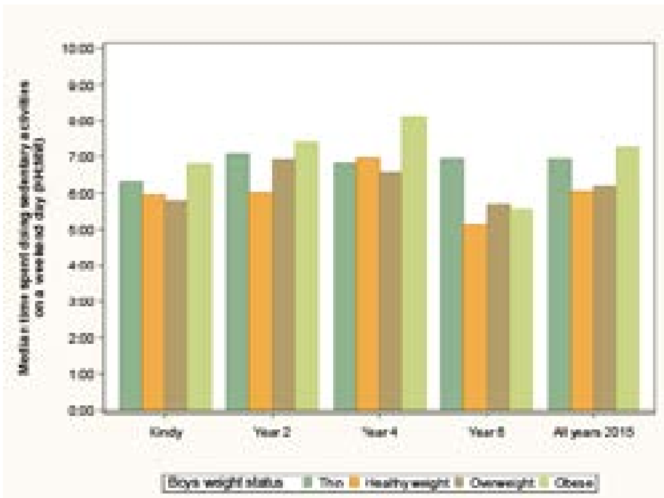

Kindy
Year 2
Year 4
All years 2015
Girls SES Low Middle High


Kindy
Year 2
Year 4
All years 2015
Boys SES Low Middle High


Kindy
Year 2
Year 4
All years 2015
Girls cultural background English European Middle-Eastern Asian


Kindy
Year 2
Year 4
All years 2015
Boys cultural background English European Middle-Eastern Asian


Kindy
Year 2
Year 4
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Kindy
Year 2
Year 4
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

DOMAINS OF SEDENTARY BEHAVIOUR

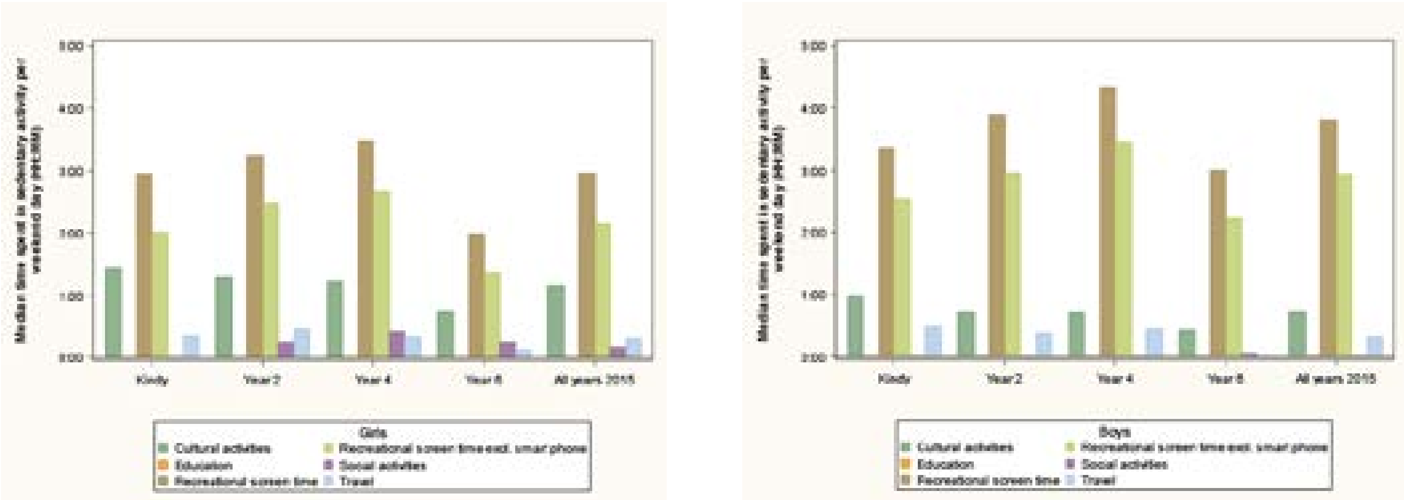
Table 11.6 and Figure 11.6 show the median daily time, in hours and minutes, that children spent in each domain of sedentary behaviour on a weekend day, by sex and year group in 2015, and in 2010 for comparison. Screen time has been reported with and without smartphone and/or tablet use. Overall, children spent 59 minutes sitting in cultural activities, 0 minutes in educational activities, 3 hours and 15 minutes on screen time (including smartphone and tablet use), 2 hours and 28 minutes on screen time (excluding smartphone and tablet use), 0 minutes in social activities and 18 minutes on passive travel in 2015. Girls spent more time in cultural and social sedentary activities than boys, and boys spent more time in screen time activities than girls. Overall, time spent sitting increased in cultural activities (15 minutes) and in passive travel (1 minute); and screen time, excluding smartphone and tablet use, decreased 46 minutes between 2010 and 2015.

Table 11.6 Median time spent in each domain of sedentary behaviour on a weekend day among children in primary school by sex and year group in 2015, and in 2010 for comparison (hours: minutes, IQR)

Weekend day	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
ALL												
Cultural	1:09	(1:45)	0:59	(1:40)	0:58	(1:43)	0:34	(1:27)	0:59	(1:45)	0:44	(1:21)
Education	0:00	(0:00)	0:00	(0:08)	0:00	(0:14)	0:00	(0:28)	0:00	(0:13)	0:00	(0:00)
Screen time [a]	2:58	(2:43)	3:29	(3:04)	3:54	(3:22)	2:29	(3:31)	3:15	(3:01)	na	
Screen time [b]	2:24	(2:12)	2:55	(2:21)	2:58	(2:32)	1:45	(2:52)	2:28	(2:31)	3:14	(2:57)
Social	0:00	(0:55)	0:00	(0:58)	0:09	(0:58)	0:10	(0:58)	0:00	(0:59)	0:00	(0:57)
Travel	0:28	(0:56)	0:28	(0:57)	0:28	(0:58)	0:04	(0:29)	0:18	(0:58)	0:17	(0:58)
GIRLS												
Cultural	1:25	(1:52)	1:17	(1:44)	1:13	(1:41)	0:44	(1:19)	1:09	(1:34)	0:56	(1:26)
Education	0:00	(0:00)	0:00	(0:10)	0:00	(0:20)	0:00	(0:29)	0:00	(0:14)	0:00	(0:00)
Screen time [a]	2:57	(2:09)	3:14	(2:52)	3:29	(2:58)	1:59	(2:44)	2:58	(2:46)	na	
Screen time [b]	2:00	(1:45)	2:29	(2:24)	2:40	(2:26)	1:21	(2:21)	2:09	(2:19)	2:59	(2:39)
Social	0:00	(0:57)	0:15	(0:59)	0:25	(1:02)	0:15	(0:57)	0:10	(0:59)	0:09	(0:58)
Travel	0:20	(0:53)	0:27	(0:56)	0:19	(0:57)	0:08	(0:28)	0:18	(0:56)	0:15	(0:58)
BOYS												
Cultural	0:59	(1:46)	0:43	(1:30)	0:43	(1:35)	0:25	(1:13)	0:43	(1:39)	0:29	(1:26)
Education	0:00	(0:00)	0:00	(0:00)	0:00	(0:10)	0:00	(0:28)	0:00	(0:08)	0:00	(0:00)
Screen time [a]	3:22	(2:59)	3:54	(3:30)	4:20	(3:11)	3:00	(4:03)	3:48	(3:55)	na	
Screen time [b]	2:32	(2:17)	2:58	(2:33)	3:27	(2:55)	2:13	(3:22)	2:56	(2:55)	3:30	(3:11)
Social	0:00	(0:52)	0:00	(0:56)	0:00	(0:57)	0:03	(0:54)	0:00	(0:58)	0:00	(0:55)
Travel	0:29	(0:57)	0:22	(0:57)	0:26	(0:58)	0:00	(0:28)	0:19	(0:58)	0:18	(0:56)

Note: No significance testing was conducted.
[a] = includes smartphone, tablet.
[b] = excludes smartphone, tablet.
na = not available.

Figure 11.6 Median time spent in each domain of sedentary behaviour on a weekend day among children in primary school by sex and year group in 2015 (hours: minutes)



SCREEN TIME

Screen time refers to leisure time spent watching television, DVDs, videos, using computers (for fun), playing computer or video games (e.g., Wii, PlayStation, Xbox, Nintendo) and, more recently, playing on smartphones or tablet devices. Recommendations on Australian children's use of electronic media, or screen time were first published in 2004 by the Department of Health and Ageing[18] and revised in 2014.[19] The current guidelines recommend that children of primary school age (i.e., 5-12 years) limit use of electronic media for entertainment to no more than two hours a day – and lower levels are associated with reduced health risks. This section presents the prevalence of children who meet this recommendation, on weekdays and on weekend days.

The 2015 screen time prevalence estimates include playing on a smartphone or tablet device. Playing on a smartphone or tablet device was not measured in 2010; hence caution is required when examining prevalence difference between 2010 and 2015.

WEEKDAY

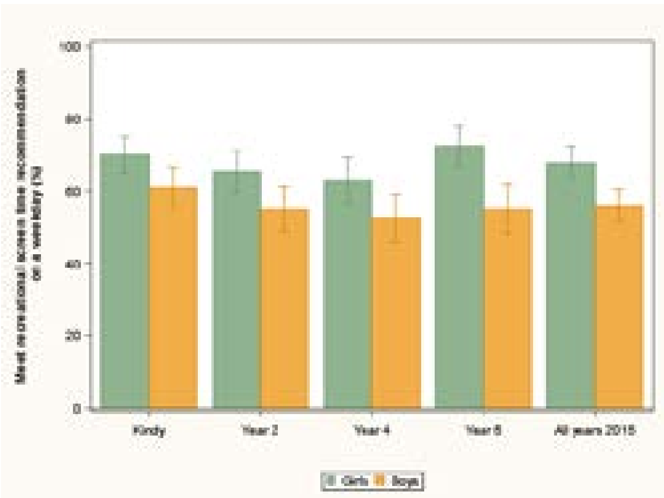
Table 11.7 and Figure 11.7 show the prevalence of meeting the recommended daily limits on screen time on a weekday (outside of school hours), among children by sex and year group in 2015 and in 2010 for comparison. Overall, 62% of children met the recommended daily limits on screen time and the prevalence of meeting the recommendation was significantly higher among girls (68%), compared with boys (56%). There was no significant change in the proportion of children meeting the recommended daily limits on screen time between 2010 and 2015.

Table 11.7 Prevalence of meeting the screen time (ST) recommendation on a weekday among children in primary school by sex, year group in 2015, and in 2010 for comparison (%, SE)

	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
ALL												
Met ST recommendation	65.5	(2.1)	60.5	(2.5)	57.8	(2.7)	63.7	(2.6)	62.0	(2.1)	58.2	(1.8)
Did not meet ST recommendation	34.5	(2.1)	39.5	(2.5)	42.2	(2.7)	36.3	(2.6)	38.0	(2.1)	41.8	(1.8)
GIRLS												
Met ST recommendation	**70.0**	**(2.5) a**	**65.5**	**(2.8) a**	**62.9**	**(3.1) a**	**72.5**	**(2.7) a**	**67.7**	**(2.4) a**	63.4	(2.1)
Did not meet ST recommendation	30.0	(2.5)	34.5	(2.8)	37.1	(3.1)	27.5	(2.7)	32.3	(2.4)	36.6	(2.1)
BOYS												
Met ST recommendation	60.9	(2.9)	55.1	(3.0)	52.4	(3.3)	55.1	(3.3)	56.0	(2.2)	53.4	(2.0)
Did not meet ST recommendation	39.1	(2.9)	44.9	(3.0)	47.6	(3.3)	44.9	(3.3)	44.0	(2.2)	46.6	(2.0)

a Indicates statistically significant difference at P < 0.05 between sex and within year group.
b Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.
na Indicates statistical significance could not be calculated due to low numbers.
No letter means there was no statistical difference.

Figure 11.7 Prevalence of meeting the recommended daily limits on screen time on weekdays among children in primary school by sex, year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately two-thirds (62%) of children met the recommended daily limits on screen time on weekdays. Table 11.8 and Figure 11.8 show the prevalence of children who met the recommended daily limits on screen time on weekdays by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, there were no significant differences in the prevalence of meeting the recommended daily limits on screen time between children from urban and from rural areas.

Change between 2010-2015: There were no significant changes in the prevalence of meeting the recommended daily limits on screen time among children from urban or rural areas, between 2010 and 2015.

Socio-economic status

2015: Overall, the prevalence of meeting the recommended daily limits on screen time was significantly lower among children from low SES (49%), compared with children from high SES backgrounds (68%). The prevalence was significantly lower among girls from low SES (53%), compared with girls from high SES backgrounds (75%); and among boys from low SES (46%), compared with boys from high SES backgrounds (60%).

Change between 2010-2015: There were no significant changes in the prevalence of meeting the recommended daily limits on screen time among children from different SES backgrounds, between 2010 and 2015.

Cultural background

2015: Overall, the prevalence of meeting the recommended daily limits on screen time was significantly lower among children from Middle Eastern cultural backgrounds (47%), compared with children from English-speaking backgrounds (68%). The prevalence was significantly lower among girls from Middle Eastern cultural backgrounds (47%), compared with girls from English-speaking (68%) backgrounds; and among boys from Middle Eastern cultural backgrounds (48%), compared with boys from English-speaking backgrounds (56%).

Change between 2010-2015: The prevalence of meeting the recommended daily limits on screen time significantly decreased among boys from European cultural backgrounds, from 80% in 2010 to 57% in 2015; and significantly increased among girls from European cultural backgrounds, from 50% in 2010 to 78% in 2015.

Weight status

2015: Overall, the prevalence of meeting the recommended daily limits on screen time was significantly lower among children in the overweight (57%) and obese (49%) BMI categories, compared with children in the healthy weight BMI category (61%). The prevalence was significantly lower among girls in the overweight (62%) and obese (51%) BMI categories, compared with girls in the healthy BMI category (72%); and among boys in the overweight (52%) and obese (46%) BMI categories, compared with boys in the healthy BMI category (59%).

Change between 2010-2015: There were no significant changes in the prevalence of meeting the recommended daily limits on screen time among children in different BMI categories, between 2010 and 2015.

Table 11.8 Prevalence of meeting the recommended daily limits on screen time on a weekday among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
ALL												
Locality												
Urban (ref)	65.6	(2.3)	59.9	(2.9)	58.7	(3.3)	63.3	(3.0)	62.0	(2.4)	58.0	(2.0)
Rural	65.0	(4.7)	62.7	(4.2)	54.9	(4.7)	65.0	(5.0)	61.9	(3.9)	59.6	(5.7)
SES												
Low	**52.9**	**(4.1) a**	**52.6**	**(4.6) a**	**40.4**	**(3.2) a**	**50.3**	**(2.0) a**	**49.1**	**(2.4) a**	49.0	(2.6)
Middle	67.5	(2.6)	59.2	(2.7)	**55.9**	**(3.3) a**	68.4	(2.7)	62.9	(2.1)	58.9	(2.5)
High (ref)	69.8	(2.4)	65.1	(3.9)	68.1	(3.3)	66.6	(3.8)	67.5	(2.7)	67.0	(2.1)
Cultural background												
English-speaking (ref)	65.7	(2.0)	60.6	(2.6)	58.1	(2.4)	64.3	(2.6)	62.3	(2.0)	58.6	(1.9)
European	83.6	(8.8)	58.6	(11.4)	66.6	(16.0)	68.6	(11.5)	68.4	(7.5)	63.7	(6.7)
Middle Eastern	**50.5**	**(8.5) a**	**43.3**	**(5.4) a**	**37.2**	**(8.5) a**	**60.0**	**(5.4)**	**47.4**	**(4.4) a**	43.4	(4.3)
Asian	66.8	(4.8)	72.5	(5.2)	66.1	(6.7)	60.0	(7.3)	66.8	(3.5)	60.9	(3.0)
BMI category												
Thin	58.9	(5.3)	62.7	(6.2)	56.5	(5.5)	68.0	(5.6)	61.4	(3.3)	65.5	(3.1)
Healthy weight (ref)	66.8	(2.2)	62.1	(2.5)	60.8	(2.8)	67.0	(2.8)	64.3	(2.0)	59.6	(2.1)
Overweight	66.9	(4.4)	56.4	(4.7)	**50.3**	**(4.8) a**	**57.4**	**(3.4) a**	**57.0**	**(2.9) a**	54.5	(2.1)
Obese	**54.5**	**(6.1) a**	49.0	(7.1)	**47.0**	**(5.3) a**	**44.6**	**(5.4) a**	**48.7**	**(3.3) a**	48.7	(2.9)
GIRLS												
Locality												
Urban (ref)	70.7	(2.9)	64.7	(3.3)	64.3	(3.7)	75.1	(2.8)	68.6	(2.8)	63.3	(2.2)
Rural	67.2	(4.2)	68.6	(4.6)	58.6	(5.5)	63.5	(6.3)	64.3	(4.6)	64.1	(7.6)
SES												
Low	**56.6**	**(6.0) a**	**55.3**	**(6.8) a**	**45.6**	**(5.0) a**	**52.8**	**(3.5) a**	**52.7**	**(3.5) a**	52.2	(3.4)
Middle	72.3	(2.2)	63.6	(3.5)	59.5	(3.9)	76.1	(2.9)	67.9	(1.8)	64.9	(2.7)
High (ref)	74.6	(3.5)	70.7	(3.9)	74.4	(3.4)	79.1	(3.1)	74.5	(3.0)	73.4	(2.1)
Cultural background												
English-speaking (ref)	71.6	(2.4)	66.0	(2.7)	63.0	(2.8)	72.5	(2.7)	68.3	(2.1)	63.6	(2.2)
European	93.5	(6.4)	67.4	(16.7)	72.1	(18.6)	75.9	(11.8)	77.9	(8.4)	**50.0**	**(9.6) b**
Middle Eastern	**46.6**	**(11.0) a**	**42.3**	**(6.9) a**	**40.7**	**(8.7) a**	62.1	(6.5)	**47.1**	**(5.1) a**	52.1	(4.7)
Asian	63.4	(6.7)	71.7	(7.7)	73.3	(7.4)	80.5	(10.0)	69.9	(5.0)	69.1	(4.6)
BMI category												
Thin	67.9	(7.0)	77.9	(7.8)	64.7	(6.9)	78.2	(4.7)	72.3	(3.5)	74.8	(3.8)
Healthy weight (ref)	70.8	(2.8)	67.6	(2.8)	65.5	(3.5)	74.6	(3.1)	69.7	(2.3)	64.4	(2.7)
Overweight	69.8	(6.1)	**56.1**	**(5.3) a**	54.9	(6.1)	69.7	(4.0)	**62.2**	**(3.6) a**	59.4	(2.6)
Obese	57.6	(8.7)	**43.1**	**(8.1) a**	55.2	(6.8)	**48.9**	**(7.1) a**	**51.2**	**(4.3) a**	54.4	(3.9)

	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
BOYS												
Locality												
Urban (ref)	60.3	(3.1)	54.4	(3.6)	52.8	(4.0)	51.3	(3.6)	55.0	(2.4)	53.0	(2.1)
Rural	62.9	(7.1)	57.4	(5.2)	51.3	(5.6)	66.5	(6.0)	59.6	(4.5)	56.2	(5.8)
SES												
Low	**49.1**	**(4.2) a**	50.3	(5.1)	**35.2**	**(4.2) a**	47.9	(3.8)	**45.8**	**(2.2) a**	46.0	(2.7)
Middle	62.2	(5.2)	54.5	(3.5)	51.9	(5.2)	61.2	(4.8)	57.6	(3.4)	53.4	(2.8)
High (ref)	65.2	(3.7)	58.2	(5.2)	61.6	(4.0)	52.9	(4.8)	60.0	(2.9)	61.2	(3.2)
Cultural background												
English-speaking (ref)	60.2	(3.1)	54.7	(3.3)	53.1	(3.1)	56.0	(3.4)	56.2	(2.3)	54.0	(2.0)
European	66.7	(21.3)	52.1	(15.4)	61.1	(19.3)	56.7	(23.9)	57.4	(9.0)	**79.8**	**(8.0) b**
Middle Eastern	54.4	(8.3)	44.5	(6.1)	33.0	(12.2)	58.2	(11.3)	**47.7**	**(4.5) a**	35.8	(4.2)
Asian	73.5	(6.1)	**73.4**	**(5.9) a**	55.6	(10.2)	**39.9**	**(7.5) a**	62.2	(3.6)	53.4	(3.1)
BMI category												
Thin	49.4	(10.0)	44.0	(8.3)	47.9	(8.3)	48.4	(10.6)	47.6	(4.8)	55.7	(4.0)
Healthy weight (ref)	62.9	(3.0)	56.4	(3.5)	56.0	(3.4)	59.3	(3.5)	58.9	(2.3)	55.3	(2.1)
Overweight	63.0	(7.6)	56.7	(6.0)	45.2	(6.4)	**48.0**	**(5.6) a**	**51.6**	**(3.6) a**	49.8	(3.0)
Obese	50.9	(7.4)	55.4	(9.3)	**38.1**	**(7.7) a**	**40.2**	**(8.3) a**	**46.0**	**(4.2) a**	43.0	(4.0)

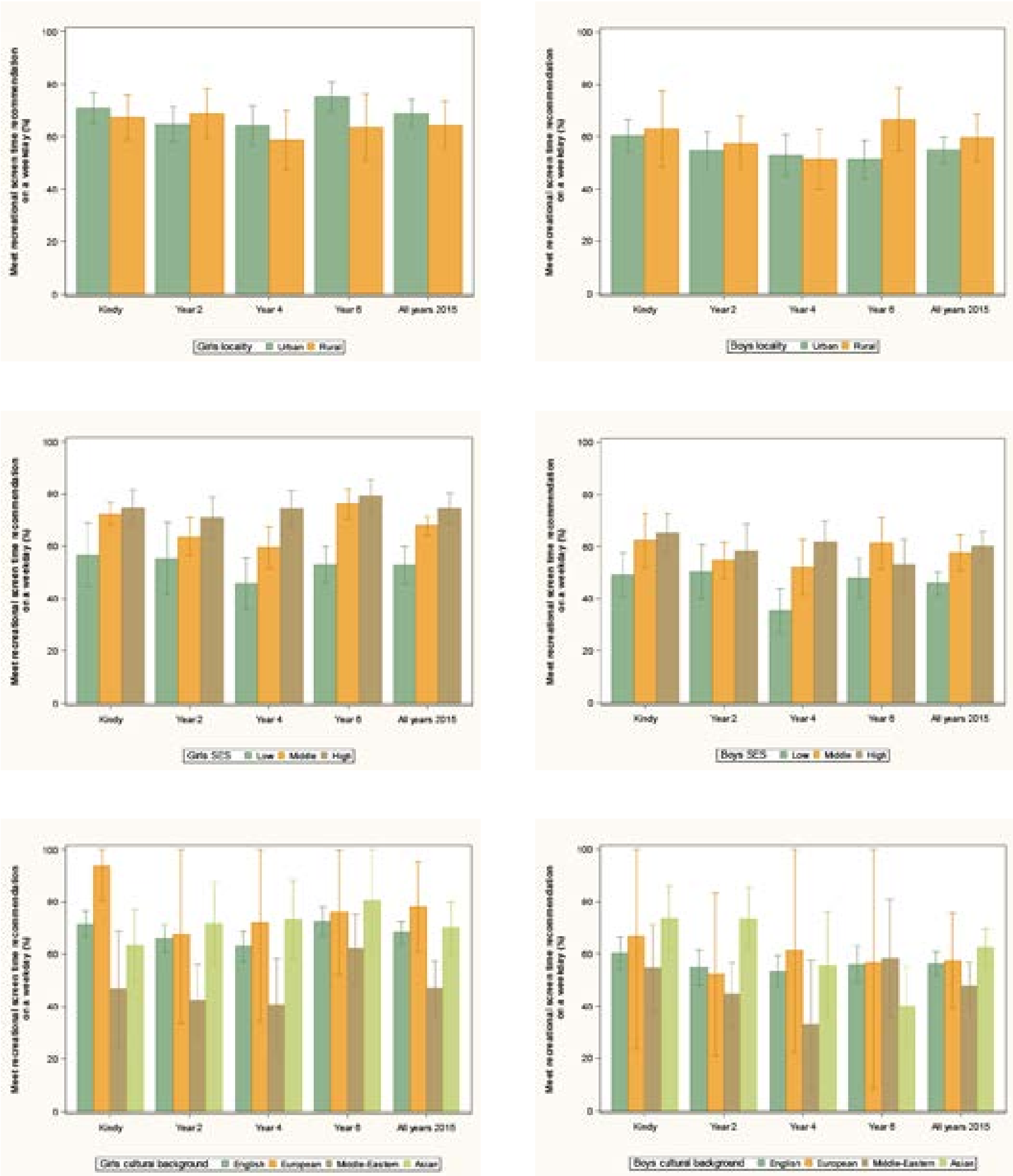
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

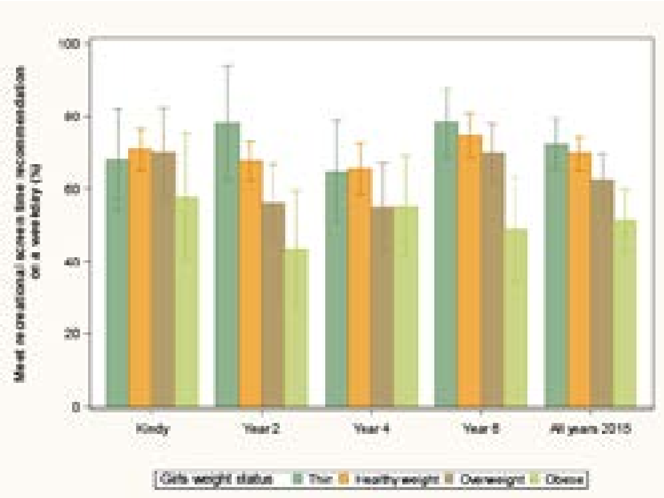
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

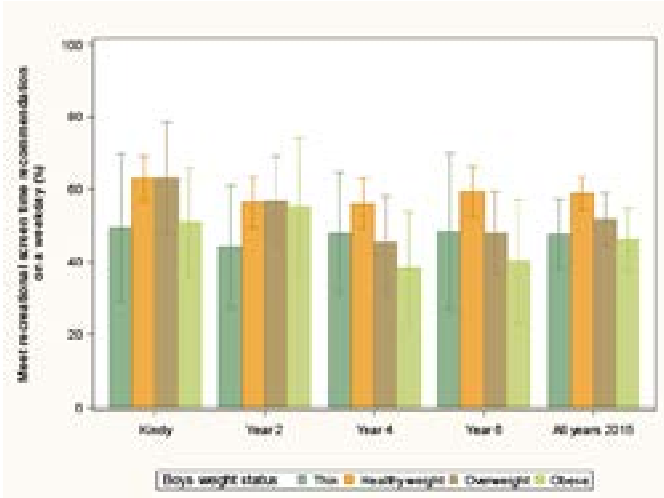
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 11.8 Prevalence of meeting the recommended daily limits on screen time on weekdays among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)







WEEKEND DAY

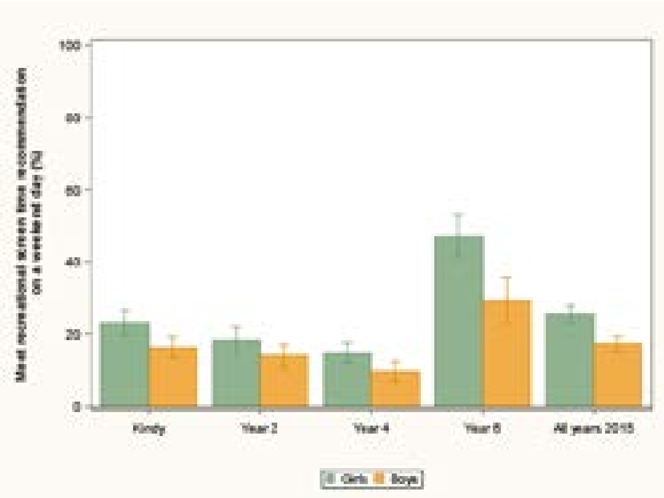
Table 11.9 and Figure 11.9 show the prevalence of meeting the recommended daily limits on screen time on weekend days, by sex and year group in 2015, and in 2010 for comparison. Overall, 21% of children met the recommended daily limits on screen time and the prevalence was significantly higher among girls (26%), compared with boys (17%). The proportion of children meeting the recommended daily limits on screen time did not change significantly between 2010 and 2015.

Table 11.9 Prevalence of meeting the screen time (ST) recommendation on weekend days among children in primary school by sex, year group in 2015, and in 2010 for comparison (%, SE)

	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
ALL												
Met ST recommendation	19.7	(1.1)	16.1	(1.3)	12.3	(1.1)	38.1	(2.4)	21.4	(0.9)	19.2	(1.0)
Did not meet ST recommendation	80.3	(1.1)	83.9	(1.3)	87.7	(1.1)	61.9	(2.4)	78.6	(0.9)	80.8	(1.0)
GIRLS												
Met ST recommendation	**23.1**	**(1.7) a**	**18.2**	**(1.8) a**	**14.8**	**(1.4) a**	**47.1**	**(2.9) a**	**25.5**	**(1.2) a**	22.2	(1.2)
Did not meet ST recommendation	76.9	(1.7)	81.8	(1.8)	85.2	(1.4)	52.9	(2.9)	74.5	(1.2)	77.8	(1.2)
BOYS												
Met ST recommendation	16.2	(1.5)	13.9	(1.6)	9.6	(1.3)	29.1	(3.2)	17.2	(1.0)	16.5	(1.0)
Did not meet ST recommendation	83.8	(1.5)	86.1	(1.6)	90.4	(1.3)	70.9	(3.2)	82.8	(1.0)	83.5	(1.0)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 11.9 Prevalence of meeting the recommended daily limits on screen time on weekend days among children in primary school by sex, year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that one in five children (21%) met the recommended daily limits on screen time on weekend days. Table 11.10 and Figure 11.10 show the prevalence of children who met the recommended daily limits on screen time on weekend days by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, there were no significant differences in the prevalence of meeting the recommended daily limits on screen time between children from urban and rural areas.

Change between 2010-2015: There were no significant changes in the prevalence of meeting the recommended daily limits on screen time among urban or rural children, between 2010 and 2015.

Socio-economic status

2015: Overall, the prevalence of meeting the recommended daily limits on screen time was significantly lower among children from low SES (17%), compared with children from high SES backgrounds (24%). The prevalence was significantly lower among girls from low SES (20%) and middle SES (24%) backgrounds, compared with girls from high SES backgrounds (29%).

Change between 2010-2015: There were no significant changes in the prevalence of meeting the recommended daily limits on screen time among children from different SES backgrounds, between 2010 and 2015.

Cultural background

2015: Overall, the prevalence of meeting the recommended daily limits on screen time was significantly lower among children from Middle Eastern cultural backgrounds (14%) and significantly higher among children from Asian cultural backgrounds (31%), compared with children from English-speaking backgrounds (21%). The prevalence was significantly lower among girls from Middle Eastern cultural backgrounds (16%), compared with girls from English-speaking (25%) backgrounds; and significantly higher among boys from Asian cultural backgrounds (30%), compared with boys from English-speaking backgrounds (17%).

Change between 2010-2015: The prevalence of meeting the recommended daily limits on screen time significantly increased among girls from English-speaking backgrounds, from 21% in 2010 to 25% in 2015; and significantly decreased among boys from European cultural backgrounds, from 42% in 2010 to 14% in 2015.

Weight status

2015: Overall, the prevalence of meeting the recommended daily limits on screen time was significantly lower among children in the obese BMI category (15%), compared with children in the healthy weight BMI category (23%). The prevalence was significantly lower among girls in the obese (17%) BMI category, compared with girls in the healthy BMI category (26%); and among boys in the thin BMI category (11%), compared with boys in the healthy BMI category (19%).

Change between 2010-2015: The prevalence of meeting the recommended daily limits on screen time significantly increased among children in the overweight BMI category, from 15% in 2010 to 20% in 2015; and among girls in the overweight BMI category, from 16% in 2010 to 24% in 2015.

Table 11.10 Prevalence of meeting the recommended daily limits on screen time on weekend days among children in primary school by sex, year group, socio-demographic characteristics, and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
ALL												
Locality												
Urban (ref)	20.2	(1.3)	16.4	(1.6)	13.3	(1.3)	37.4	(2.8)	21.6	(1.1)	19.6	(1.0)
Rural	17.8	(3.1)	14.9	(1.9)	9.1	(2.5)	40.5	(5.0)	20.7	(2.3)	16.8	(2.7)
SES												
Low	20.2	(2.0)	12.9	(2.6)	**8.3**	**(1.2) a**	**27.3**	**(2.8) a**	**17.2**	**(1.1) a**	17.1	(1.1)
Middle	17.9	(2.6)	14.3	(1.4)	**9.8**	**(2.0) a**	41.3	(3.6)	21.2	(1.6)	19.0	(1.4)
High (ref)	20.7	(1.8)	18.9	(2.3)	16.3	(1.8)	40.9	(3.8)	23.6	(1.5)	21.8	(2.2)
Cultural background												
English-speaking (ref)	18.0	(1.1)	16.2	(1.3)	11.7	(1.1)	38.8	(2.4)	21.0	(0.9)	18.4	(1.1)
European	30.2	(13.0)	14.5	(8.0)	**25.4**	**(10.0) a**	38.9	(13.7)	26.2	(6.1)	31.9	(7.7)
Middle Eastern	23.1	(5.3)	**1.1**	**(1.2) a**	6.6	(2.1)	24.9	(8.0)	**13.6**	**(2.7) a**	15.0	(2.0)
Asian	**33.9**	**(5.2) a**	27.1	(6.6)	**22.2**	**(5.5) a**	40.2	(6.5)	**30.7**	**(4.0) a**	27.9	(2.7)
BMI category												
Thin	19.0	(5.3)	17.5	(5.0)	13.7	(4.8)	40.1	(5.3)	22.5	(2.7)	25.4	(2.8)
Healthy weight (ref)	18.5	(1.2)	17.9	(1.6)	13.7	(1.3)	41.0	(3.0)	22.5	(1.1)	20.5	(1.2)
Overweight	26.6	(4.4)	13.4	(3.1)	9.9	(2.2)	**29.6**	**(2.9) a**	19.9	(1.5)	**15.2**	**(1.4) b**
Obese	19.0	(6.0)	**6.2**	**(2.9) a**	**5.1**	**(2.2) a**	31.7	(6.3)	**14.5**	**(1.8) a**	14.7	(2.6)
GIRLS												
Locality												
Urban (ref)	23.8	(2.0)	18.5	(2.1)	15.9	(1.6)	47.7	(3.3)	26.0	(1.3)	22.6	(1.3)
Rural	20.5	(4.2)	16.6	(2.8)	11.2	(3.0)	45.2	(5.8)	23.3	(2.7)	18.6	(3.5)
SES												
Low	20.4	(3.6)	15.7	(5.6)	**11.5**	**(2.3) a**	**30.4**	**(4.6) a**	**19.5**	**(1.7) a**	17.3	(1.6)
Middle	20.6	(3.6)	16.5	(2.0)	**11.4**	**(2.2) a**	48.7	(3.1)	**24.2**	**(1.5) a**	23.2	(1.5)
High (ref)	26.2	(2.9)	20.3	(2.7)	19.3	(2.2)	54.1	(4.3)	29.1	(1.8)	25.8	(2.8)
Cultural background												
English-speaking (ref)	18.0	(1.8)	18.2	(1.8)	14.5	(1.3)	47.5	(2.9)	25.2	(1.1)	**21.4**	**(1.4) b**
European	38.4	(16.3)	9.0	(8.0)	34.3	(15.6)	63.0	(14.4)	36.8	(8.3)	23.5	(8.6)
Middle Eastern	26.4	(6.7)	**2.0**	**(2.3) a**	**5.5**	**(2.0) a**	**33.1**	**(6.7) a**	**15.6**	**(2.5) a**	21.1	(3.4)
Asian	**34.1**	**(5.9) a**	**30.6**	**(6.4) a**	19.3	(4.9)	44.4	(8.3)	31.4	(4.3)	29.4	(3.4)
BMI category												
Thin	26.5	(8.1)	27.4	(8.6)	20.3	(6.4)	49.6	(6.7)	32.0	(3.7)	32.8	(4.1)
Healthy weight (ref)	21.7	(1.8)	19.4	(2.3)	16.6	(1.9)	48.6	(3.7)	26.2	(1.5)	23.8	(1.4)
Overweight	31.0	(7.3)	14.5	(3.8)	9.7	(2.7)	43.8	(4.8)	24.2	(2.4)	**16.1**	**(2.0) b**
Obese	18.5	(9.0)	9.8	(5.6)	6.7	(3.6)	36.6	(7.6)	**16.7**	**(2.8) a**	13.8	(3.3)

	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
BOYS												
Locality												
Urban (ref)	16.5	(1.7)	14.0	(2.0)	10.5	(1.5)	26.6	(3.6)	16.8	(1.2)	16.7	(1.1)
Rural	15.1	(2.5)	13.5	(2.7)	7.1	(2.6)	36.4	(6.2)	18.3	(2.4)	15.6	(2.0)
SES												
Low	20.0	(2.8)	10.5	(3.2)	**5.3**	**(1.7) a**	24.3	(4.4)	15.0	(1.4)	17.0	(1.7)
Middle	14.8	(2.3)	12.0	(2.4)	8.0	(2.5)	34.4	(6.1)	18.0	(2.2)	15.3	(1.6)
High (ref)	15.4	(2.2)	17.3	(2.6)	13.2	(1.9)	26.3	(3.4)	17.6	(1.4)	18.1	(2.2)
Cultural background												
English-speaking (ref)	18.0	(1.4)	14.1	(1.6)	8.7	(1.3)	29.9	(3.4)	16.8	(1.1)	15.7	(1.2)
European	16.1	(15.6)	18.5	(11.6)	15.4	(14.7)	na		13.7	(6.3)	**42.3**	**(12.9) b**
Middle Eastern	20.0	(8.6)	na		8.0	(5.5)	17.5	(10.0)	11.5	(4.3)	9.8	(3.4)
Asian	**33.5**	**(8.0) a**	22.7	(9.0)	**26.2**	**(8.8) a**	35.8	(9.4)	**29.5**	**(5.1) a**	26.5	(2.8)
BMI category												
Thin	11.2	(5.6)	5.4	(3.5)	6.8	(4.3)	21.9	(8.6)	**10.7**	**(2.8) a**	17.8	(3.7)
Healthy weight (ref)	15.3	(1.7)	16.4	(2.0)	10.7	(1.4)	33.3	(3.6)	18.7	(1.1)	17.6	(1.3)
Overweight	20.9	(5.8)	11.9	(4.3)	10.1	(2.9)	**18.7**	**(3.8) a**	15.4	(1.9)	14.4	(1.8)
Obese	19.6	(6.2)	**2.4**	**(2.4) a**	3.4	(2.3)	26.6	(8.5)	12.1	(2.8)	15.5	(3.4)

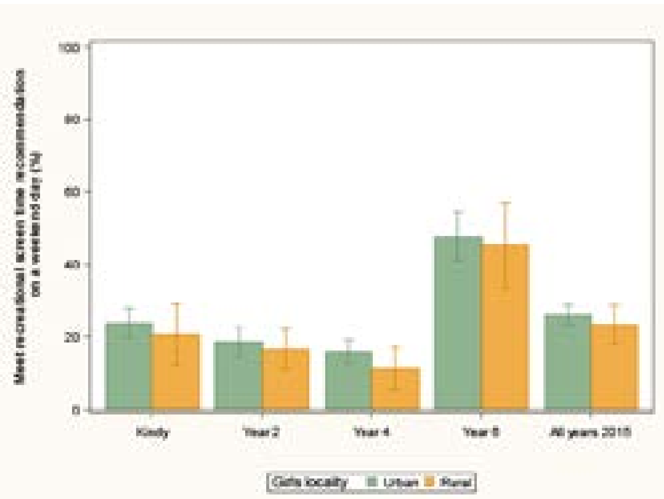
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

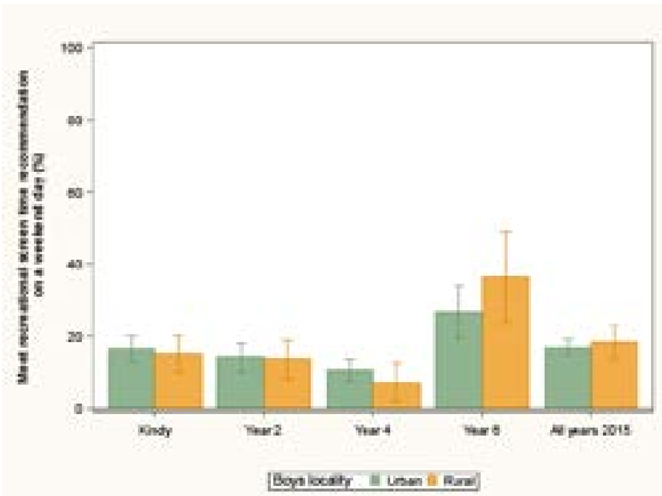
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

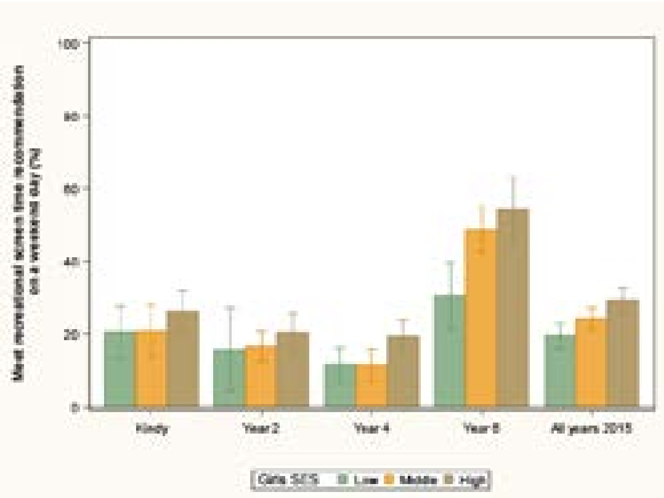
na *Indicates statistical significance could not be calculated due to low numbers.*

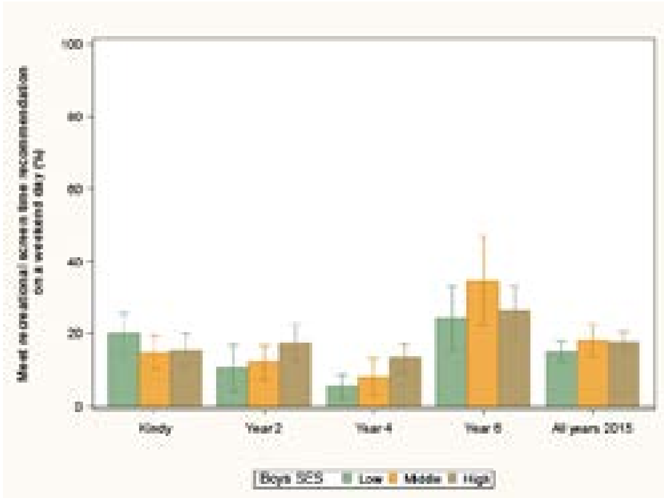
No letter means there was no statistical difference.

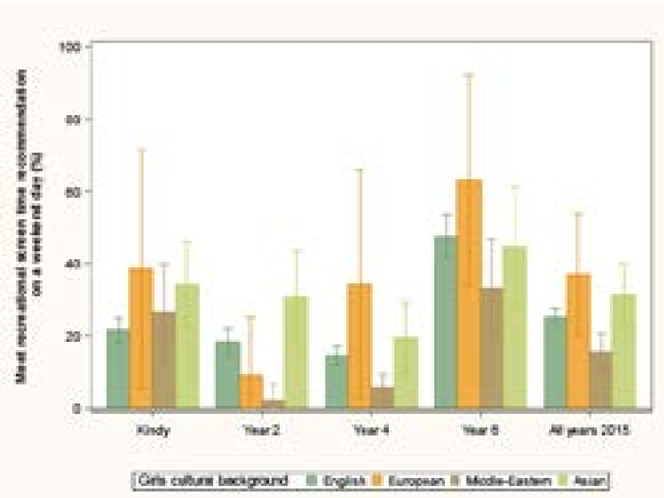
Figure 11.10 Prevalence of meeting the recommended daily limits on screen time on weekend days among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

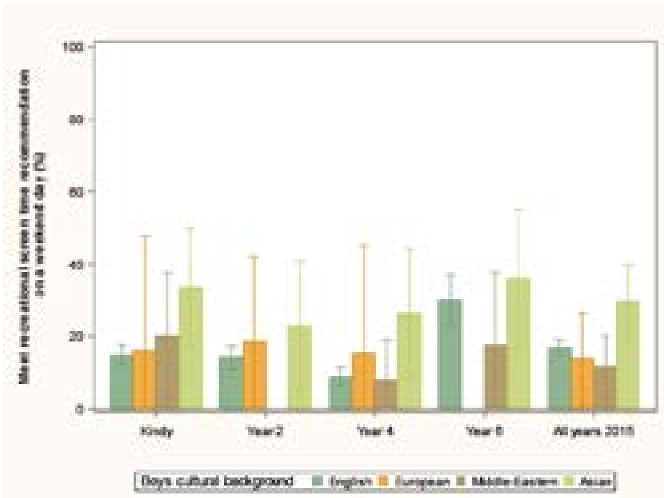


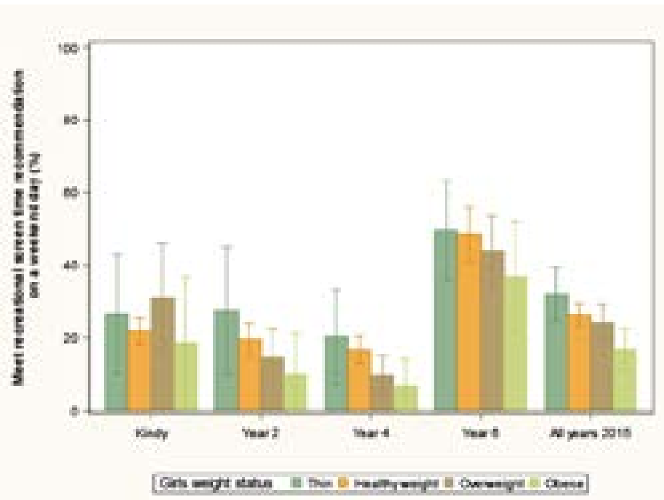


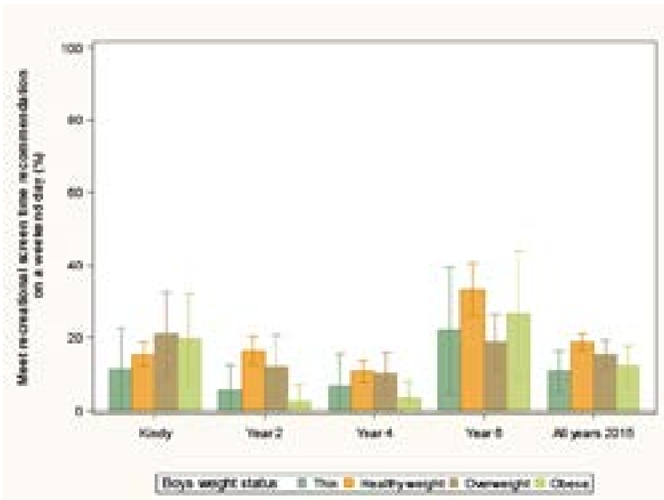

Met recreational screen time recommendation on a weekend day (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls SES
Low
Middle
High


Met recreational screen time recommendation on a weekend day (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys SES
Low
Middle
High


Met recreational screen time recommendation on a weekend day (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls culture background
English
European
Middle-Eastern
Asian


Met recreational screen time recommendation on a weekend day (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Met recreational screen time recommendation on a weekend day (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Met recreational screen time recommendation on a weekend day (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

AWARENESS OF CHILDREN'S SCREEN TIME GUIDELINES

Recommendations for children's screen time exposure were introduced in 2004.[18] Monitoring the level of parent and child awareness of the recommendation is a proxy indicator of the effectiveness of the social marketing campaigns about the recommendation. For SPANS, parent and Year 6 children's awareness of the recommended daily limits on screen time was assessed two ways: (i) using an opened-ended question asking respondents to report the recommendation with only respondents reporting 2 hours a day classified as knowing the recommendation; and (ii) providing a 'I don't know' response option. The 'I don't know' response option decreases the likelihood of respondents being forced to guess the recommendation and can be used to inform dissemination strategies around the recommended daily limits on screen times.

Table 11.11 and Figure 11.11 show the prevalence of knowing the recommended daily limits on screen time for children by sex and year group in 2015, and in 2010 for comparison. Overall, 13% of parents and Year 6 children knew the recommended daily limits on screen time for children and the prevalence of knowing the recommendation was significantly lower among girls (12%), compared with boys (15%). The proportion of boys knowing the recommended daily limits on screen time significantly increased from 12% in 2010 to 15% in 2015.

Table 11.11 Prevalence of knowing the recommended daily limits on screen time for primary school children by year and sex in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Correctly reported < 2hrs	14.8 (1.3)	15.3 (1.0)	15.0 (1.4)	7.3 (0.9)	13.2 (0.7)	11.7 (0.5)
Did not report < 2hrs	85.2 (1.3)	84.7 (1.0)	85.0 (1.4)	92.7 (0.9)	86.8 (0.7)	88.3 (0.5)
GIRLS						
Correctly reported < 2hrs	13.5 (1.7)	14.1 (1.3)	14.6 (1.9)	**5.3 (1.1) a**	**12.0 (1.0) a**	11.8 (0.8)
Did not report < 2hrs	86.5 (1.7)	85.9 (1.3)	85.4 (1.9)	94.7 (1.1)	88.0 (1.0)	88.2 (0.8)
BOYS						
Correctly reported < 2hrs	16.2 (1.8)	16.6 (1.6)	15.5 (1.9)	9.3 (1.4)	14.5 (0.8)	**11.7 (0.6) b**
Did not report < 2hrs	83.8 (1.8)	83.4 (1.6)	84.5 (1.9)	90.7 (1.4)	85.5 (0.8)	**88.3 (0.6) b**

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 11.11 Prevalence of knowing the recommended daily limits on screen time for primary school children by year and sex in 2015 (%, 95%CI)

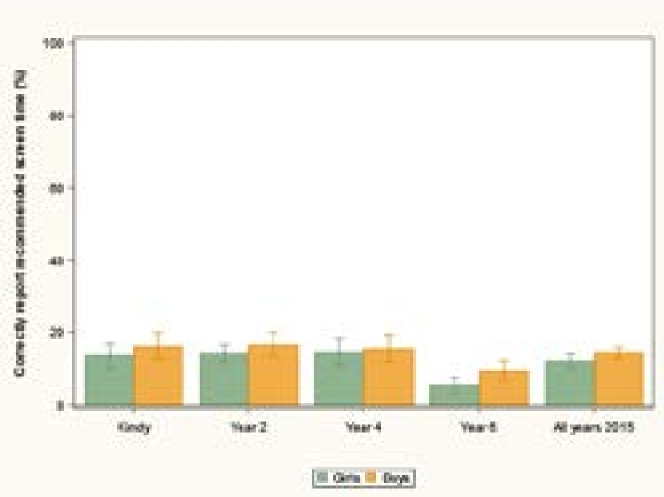


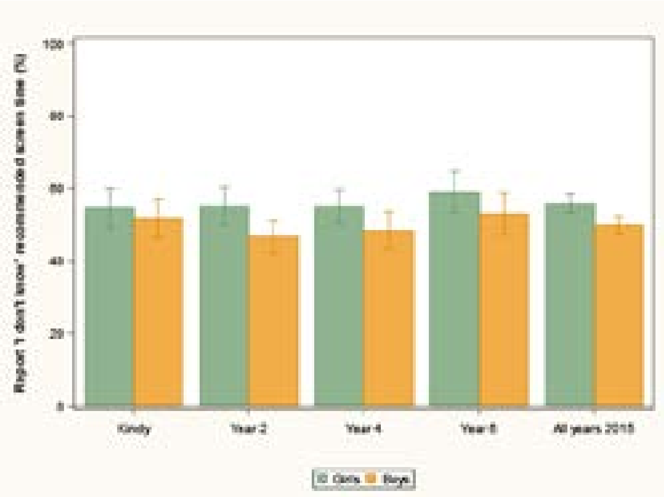
Table 11.12 and Figure 11.12 show the prevalence of not knowing the recommended daily limits on screen time by sex and year group in 2015, and in 2010 for comparison. Overall, 53% of parents and Year 6 children do not know the recommended daily limits on screen time and the prevalence of not knowing the recommendation was significantly higher among girls (56%), compared with boys (50%). Overall, the prevalence of not knowing the recommendation has significantly increased among children, from 47% in 2010 to 53% in 2015; among girls, from 47% in 2010 to 56% in 2015; and among boys, from 46% in 2010 to 50% in 2015.

Table 11.12 Prevalence of not knowing the recommended daily limits on screen time among children in primary school by year and sex in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	**Year 2**	**Year 4**	**Year 6**	**All years**	**All years**
ALL						
Did not know recommendation	53.1 (1.9)	51.0 (1.9)	51.8 (1.9)	55.9 (2.3)	52.9 (1.1)	**46.5 (0.9) b**
GIRLS						
Did not know recommendation	54.5 (2.7)	**55.1 (2.6) a**	**55.0 (2.3) a**	58.9 (2.9)	**55.8 (1.3) a**	**46.8 (1.3) b**
BOYS						
Did not know recommendation	51.6 (2.7)	46.5 (2.2)	48.4 (2.5)	52.8 (2.9)	49.9 (1.2)	**46.3 (1.3) b**

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 11.12 Prevalence of not knowing the recommended daily limits on screen time among children in primary school by year and sex in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that more than half (53%) of parents and Year 6 children do not know the recommended daily limits on screen time. Table 11.13 and Figure 11.13 show the prevalence of not knowing the recommended daily limits on screen time among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, there were no significant differences in the prevalence of not knowing the recommended daily limits on screen time between children from urban and rural areas.

Change between 2010-2015: Overall, the prevalence of not knowing the recommended daily limits on screen time has significantly increased among children from urban areas, from 47% in 2010 to 53% in 2015; and among children from rural areas, from 45% in 2010 to 54% in 2015.

Socio-economic status

2015: Overall, there was no significant differences in the prevalence of not knowing the recommended daily limits on screen time between children from different SES backgrounds.

Change between 2010-2015: Overall, the prevalence of not knowing the recommended daily limits on screen time has significantly increased among children from low SES (from 44% in 2010 to 53% in 2015), middle SES (from 48% in 2010 to 55% in 2015) and from high SES backgrounds (from 47% in 2010 to 52% in 2015).

Cultural background

2015: Overall, the prevalence not knowing the recommended daily limits on screen time was significantly higher among children from Asian cultural backgrounds (60%), compared with children from English-speaking backgrounds (53%). The prevalence was significantly lower among girls from Middle Eastern cultural backgrounds (47%), compared with girls from English-speaking backgrounds (56%); and among boys from Asian cultural backgrounds (58%), compared with boys from English-speaking backgrounds (50%).

Change between 2010-2015: Overall, the prevalence of not knowing the recommended daily limits on screen time has significantly increased among children from English-speaking backgrounds, from 49% in 2010 to 53% in 2015; from Middle Eastern (36% in 2010 to 46% in 2015); and Asian cultural backgrounds (41% in 2010 to 60% in 2015). Significant increases in the prevalence of not knowing the recommendations were observed among girls from all cultural backgrounds, and among boys from Asian cultural backgrounds (from 39% in 2010 to 58% in 2015).

Weight status

2015: Overall, there was no significant difference in the prevalence of not knowing the recommended daily limits on screen time between children from different BMI categories.

Change between 2010-2015: Overall, the prevalence of not knowing the recommended daily limits on screen time has significantly increased among children in the thin BMI category, from 46% in 2010 to 55% in 2015; and healthy weight BMI category, from 47% in 2010 to 53% in 2015. The prevalence significantly increased among girls in the thin (from 48% in 2010 to 58% in 2015), healthy weight (from 47% in 2010 to 56% in 2015) and overweight (from 46% in 2010 to 53% in 2015) BMI categories.

Table 11.13 Prevalence of not knowing the recommended daily limits on screen time among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Locality						
Urban (ref)	52.6 (2.1)	49.9 (2.3)	53.0 (2.3)	55.0 (2.6)	52.5 (1.2)	**46.7 (1.0) b**
Rural	55.0 (4.8)	55.1 (3.0)	48.0 (2.9)	58.7 (5.1)	54.1 (1.9)	**45.4 (1.7) b**
SES						
Low	56.4 (2.8)	**57.1 (4.5) a**	49.8 (3.5)	47.7 (5.1)	52.9 (1.8)	**44.4 (1.5) b**
Middle	55.5 (3.8)	52.3 (2.3)	52.0 (3.1)	58.2 (2.7)	54.6 (1.6)	**47.7 (1.5) b**
High (ref)	49.8 (2.8)	47.0 (3.0)	52.7 (2.8)	58.0 (3.8)	51.6 (1.7)	**47.1 (1.7) b**
Cultural background						
English-speaking (ref)	18.0 (2.2)	50.8 (2.0)	52.1 (1.9)	56.9 (2.4)	53.3 (1.1)	**48.5 (1.0) b**
European	46.4 (12.0)	47.4 (9.1)	46.7 (13.3)	50.8 (13.1)	47.9 (6.1)	33.5 (7.2)
Middle Eastern	51.7 (6.5)	47.6 (10.4)	45.7 (3.1)	38.8 (9.7)	46.3 (4.2)	**36.3 (4.2) b**
Asian	59.6 (3.7)	59.5 (5.7)	61.4 (5.5)	59.8 (6.9)	**60.0 (3.1) a**	**40.5 (3.2) b**
BMI category						
Thin	54.3 (4.6)	48.4 (6.2)	51.5 (6.3)	63.4 (6.2)	54.6 (3.0)	**45.5 (2.7) b**
Healthy weight (ref)	53.8 (2.4)	51.0 (2.2)	50.8 (2.5)	57.4 (2.4)	53.3 (1.3)	**46.8 (1.2) b**
Overweight	46.3 (5.3)	49.3 (3.8)	52.6 (3.2)	**48.5 (3.8) a**	49.4 (2.0)	45.6 (1.8)
Obese	54.7 (6.4)	53.4 (7.8)	55.8 (4.7)	54.2 (6.8)	54.5 (3.2)	50.4 (4.3)
GIRLS						
Locality						
Urban (ref)	54.4 (3.0)	53.8 (3.0)	58.0 (2.3)	59.1 (3.4)	56.2 (1.6)	**47.3 (1.3) b**
Rural	54.9 (5.8)	60.9 (3.8)	**45.3 (4.2) a**	58.3 (5.5)	54.5 (2.3)	**42.9 (5.4) b**
SES						
Low	54.1 (3.0)	**62.4 (4.2) a**	53.0 (5.5)	**48.2 (5.7) a**	54.4 (2.4)	**44.1 (2.7) b**
Middle	54.8 (4.1)	57.3 (3.5)	55.8 (3.9)	59.4 (3.5)	56.8 (1.9)	**49.5 (2.0) b**
High (ref)	54.5 (5.1)	50.6 (3.9)	55.4 (3.1)	63.8 (5.0)	55.7 (2.3)	**45.6 (1.9) b**
Cultural background						
English-speaking (ref)	55.6 (3.1)	55.4 (2.8)	55.1 (2.2)	59.3 (3.0)	56.3 (1.4)	**49.0 (1.4) b**
European	43.7 (16.4)	37.0 (16.7)	65.8 (15.7)	75.4 (12.6)	54.6 (8.6)	**24.7 (7.6) b**
Middle Eastern	47.8 (10.3)	47.7 (10.8)	52.6 (5.7)	**35.6 (6.5) a**	**46.7 (4.7) a**	**34.5 (4.2) b**
Asian	56.8 (6.3)	60.7 (8.3)	65.6 (6.1)	70.6 (9.5)	61.6 (4.3)	**41.9 (3.5) b**
BMI category						
Thin	49.4 (5.9)	56.1 (9.6)	60.2 (6.9)	65.4 (7.2)	58.3 (3.6)	**47.8 (3.8) b**
Healthy weight (ref)	56.3 (3.1)	54.6 (2.8)	51.8 (2.9)	59.7 (3.0)	55.6 (1.6)	**46.8 (1.7) b**
Overweight	47.0 (7.3)	55.2 (4.9)	57.2 (4.2)	52.1 (4.5)	53.3 (2.6)	**46.3 (2.0) b**
Obese	55.9 (10.9)	54.3 (7.8)	64.3 (6.0)	60.8 (9.2)	58.9 (4.5)	49.6 (5.9)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
BOYS						
Locality						
Urban (ref)	50.7 (3.2)	45.6 (2.7)	47.6 (3.0)	50.7 (2.8)	48.7 (1.2)	46.2 (1.3)
Rural	55.1 (4.5)	50.0 (4.0)	50.6 (4.2)	59.2 (7.2)	53.8 (2.6)	47.4 (4.5)
SES						
Low	**58.7 (4.4) a**	52.7 (5.6)	46.6 (5.4)	47.2 (7.4)	51.4 (2.0)	44.8 (3.1)
Middle	56.3 (5.5)	47.0 (3.4)	47.7 (4.4)	57.1 (4.4)	**52.2 (1.9) a**	**46.1 (1.7) b**
High (ref)	45.3 (3.2)	42.7 (3.0)	49.8 (3.8)	51.7 (3.5)	47.2 (1.8)	48.4 (2.4)
Cultural background						
English-speaking (ref)	51.5 (2.8)	45.8 (2.3)	49.1 (2.7)	54.4 (3.0)	50.2 (1.3)	48.0 (1.4)
European	51.0 (16.6)	55.0 (15.3)	27.6 (17.4)	**11.2 (10.1) a**	40.2 (9.3)	43.7 (14.1)
Middle Eastern	55.1 (14.9)	47.4 (12.6)	37.5 (5.8)	41.6 (14.5)	45.9 (4.7)	37.7 (5.3)
Asian	65.2 (8.3)	57.8 (6.1)	55.5 (7.9)	49.2 (10.6)	**57.7 (3.5) a**	**39.1 (4.4) b**
BMI category						
Thin	59.4 (8.7)	38.9 (8.2)	42.5 (8.5)	59.5 (12.4)	49.8 (4.1)	43.1 (4.0)
Healthy weight (ref)	51.4 (3.1)	47.3 (2.8)	49.7 (3.2)	55.2 (3.0)	50.9 (1.6)	46.8 (1.5)
Overweight	45.4 (7.5)	41.7 (6.2)	47.5 (5.9)	**45.8 (4.7) a**	45.3 (2.4)	44.9 (3.1)
Obese	53.4 (7.5)	52.3 (11.0)	47.1 (6.6)	47.4 (6.9)	50.0 (3.2)	51.1 (4.7)

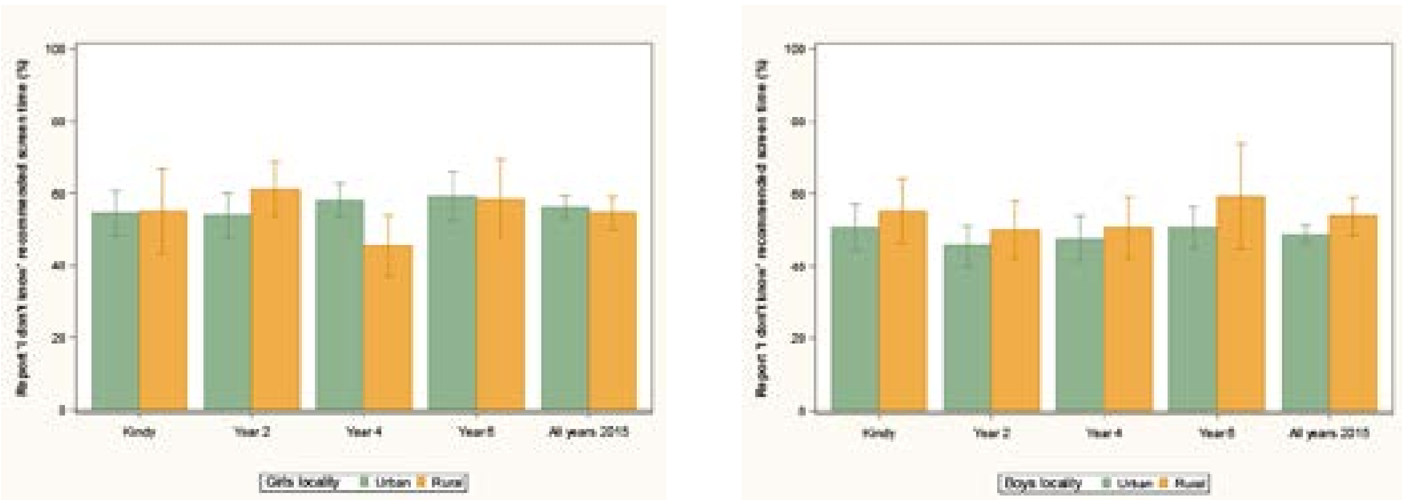
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

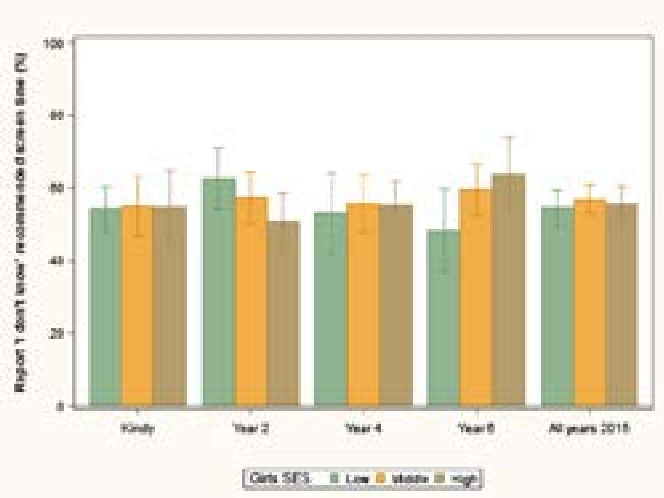
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

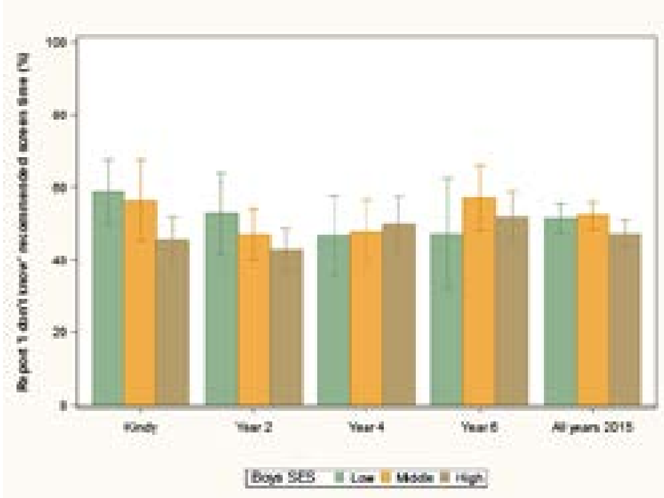
na *Indicates statistical significance could not be calculated due to low numbers.*

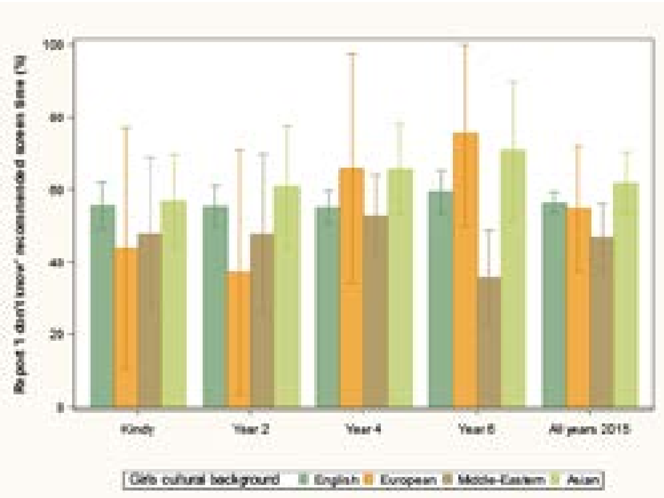
No letter means there was no statistical difference.

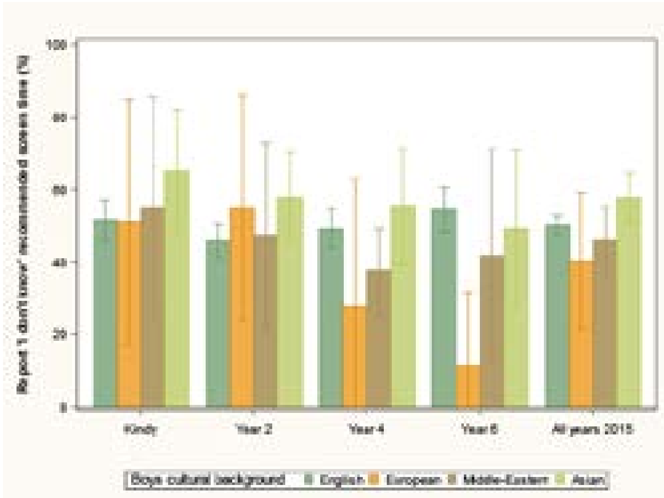
Figure 11.13 Prevalence of not knowing the recommended daily limits on screen time among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

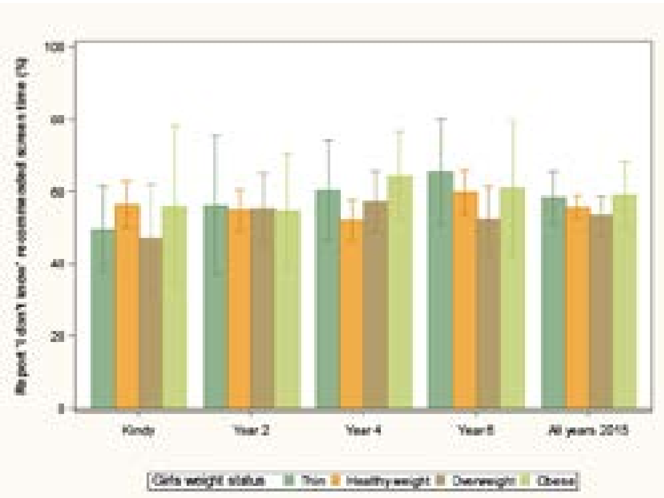


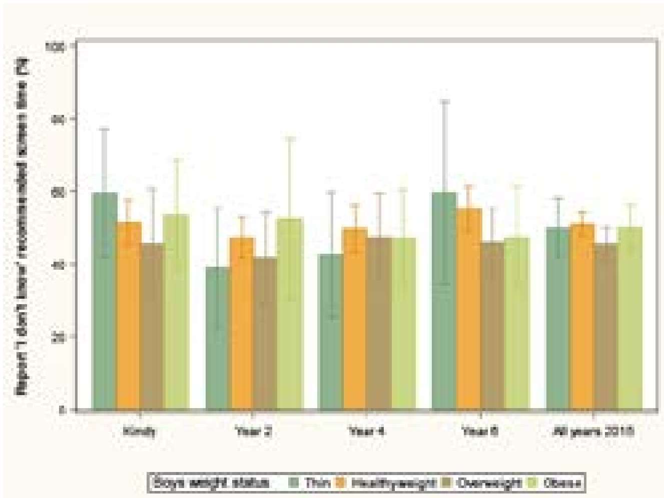

Report 'I don't know' recommended screen time (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls SES Low Middle High


Report 'I don't know' recommended screen time (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys SES Low Middle High


Report 'I don't know' recommended screen time (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls cultural background English European Middle-Eastern Asian


Report 'I don't know' recommended screen time (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys cultural background English European Middle-Eastern Asian


Report 'I don't know' recommended screen time (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Report 'I don't know' recommended screen time (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

TELEVISION IN THE BEDROOM

When televisions first appeared in homes in the 1950s they were located in a family room for family entertainment.[20] It is not clear exactly when, but televisions have slowly relocated into children's bedrooms with 28% of Australian children age 5-17 years in 2011 having a television in their bedroom.[21] Similarly, it is not clear why televisions are commonplace in children's bedrooms but factors such as replacing old television sets, reducing family conflicts over program choices, and a means to increase parents' discretionary time through children spending more time in their bedrooms are plausible explanations.[22]

What is clear, is that children with a television in their bedroom are at greater risk of developing overweight and obesity,[23] have lower academic performance,[24] reduced sleep quality[25] and insufficient sleep.[26] This section reports on the prevalence of televisions in children's bedrooms.

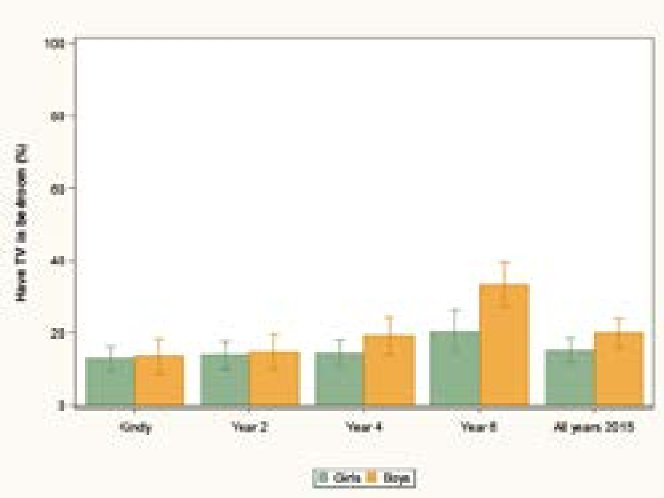
Table 11.14 and Figure 11.14 show the prevalence of having a television in the bedroom among children by sex and year group in 2015, and in 2010 for comparison. Overall, 17% of children had a television in their bedroom and the prevalence was significantly lower among girls (15%), compared with boys (20%). Overall, the prevalence of having a television in the bedroom has significantly decreased, from 28% in 2010 to 17% in 2015; among girls, from 26% in 2010 to 15% in 2105; and among boys, from 29% in 2010 to 20% in 2015.

Table 11.14 Prevalence of television in the bedroom among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Had TV in the bedroom	13.1 (1.8)	14.2 (1.8)	16.6 (1.9)	26.8 (2.5)	17.4 (1.7)	**27.6 (2.0) b**
Did not have a TV in the bedroom	86.9 (1.8)	85.8 (1.8)	83.4 (1.9)	73.2 (2.5)	82.6 (1.7)	**72.4 (2.0) b**
GIRLS						
Had TV in the bedroom	12.7 (1.7)	13.7 (1.9)	**14.2 (1.9) a**	**20.2 (3.0) a**	**15.1 (1.7) a**	**26.4 (2.1) b**
Did not have a TV in the bedroom	87.3 (1.7)	86.3 (1.9)	85.8 (1.9)	79.8 (3.0)	84.9 (1.7)	**73.6 (2.1) b**
BOYS						
Had TV in the bedroom	13.4 (2.4)	14.7 (2.4)	19.1 (2.6)	33.3 (3.1)	19.9 (2.0)	**28.8 (2.3) b**
Did not have a TV in the bedroom	86.6 (2.4)	85.3 (2.4)	80.9 (2.6)	66.7 (3.1)	80.1 (2.0)	**71.2 (2.3) b**

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 11.14 Prevalence of a television in the bedroom among children in primary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately 17% of hildren had a television in their bedroom. Table 11.15 and Figure 11.15 show the prevalence of a television in the bedroom among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, there was no significant difference in the prevalence of a television in the bedroom between children from urban and rural areas.

Change between 2010-2015: Overall, the prevalence of a television in the bedroom significantly decreased among children from urban areas, from 28% in 2010 to 16% in 2015; among girls from urban areas, from 26% in 2010 to 14% in 2015; and among boys from urban areas, from 29% in 2010 to 19% in 2015.

Socio-economic status

2015: Overall, the prevalence of a television in the bedroom was significantly higher among children from low (26%) and middle (21%) SES backgrounds, compared with children from high SES backgrounds (11%). The prevalence was significantly higher among girls from low (22%) and middle (18%) SES backgrounds, compared with girls from high SES backgrounds (9%); and among boys from low (30%) and middle (24%) SES backgrounds, compared with boys from high SES backgrounds (12%).

Change between 2010-2015: Overall, the prevalence of a television in the bedroom significantly decreased among children from low SES, from 40% in 2010 to 26% in 2015; and from high SES backgrounds, from 18% in 2010 to 11% in 2015. The prevalence significantly decreased among girls from low SES (from 40% in 2010 to 22% in 2015) and from high SES backgrounds (from 18% in 2010 to 9% in 2015), and among boys from low SES (from 41% in 2010 to 30% in 2015) and from high SES backgrounds (from 18% in 2010 to 12% in 2015).

Cultural background

2015: Overall, the prevalence of a television in the bedroom was significantly lower among children from Asian cultural backgrounds (9%), compared with children from English-speaking backgrounds (18%); and among boys from Asian cultural backgrounds (6%), compared with boys from English-speaking backgrounds (21%).

Change between 2010-2015: Overall, the prevalence of a television in the bedroom significantly decreased among children from English-speaking backgrounds (28% in 2010 to 18% in 2015), from Middle Eastern (29% in 2010 to 17% in 2015) and from Asian cultural backgrounds (23% in 2010 to 9% in 2015). The prevalence significantly decreased among girls from English-speaking backgrounds (from 27% in 2010 to 16% in 2015), from Middle Eastern cultural backgrounds (from 25% in 2010 to 13% in 2015), and from Asian cultural backgrounds (from 21% in 2010 to 11% in 2015).

Similarly, prevalence of a television in the bedroom significantly decreased among boys from English-speaking backgrounds (from 29% in 2010 to 21% in 2015), from European cultural backgrounds (from 33% in 2010 to 7% in 2015), from Middle Eastern cultural backgrounds (from 32% in 2010 to 21% in 2015), and from Asian cultural backgrounds (from 25% in 2010 to 6% in 2015).

Weight status

2015: Overall, the prevalence of a television in the bedroom was significantly higher among children in the overweight (22%) and obese (29%) BMI categories compared with children in a healthy weight BMI category (16%). The prevalence was significantly higher among girls in the obese (24%) BMI category, compared with healthy weight BMI category (14%); and among boys in the overweight (26%) and obese (35%) BMI categories, compared with boys in the healthy weight BMI category (17%).

Change between 2010-2015: Overall, the prevalence of a television in the bedroom significantly decreased among children in the healthy weight BMI category, from 26% in 2010 to 16% in 2015; in the overweight BMI category, from 33% in 2010 to 22% in 2015; and in the obese BMI category, from 42% in 2010 to 29% in 2015. The prevalence significantly decreased among girls in the healthy weight BMI category, from 25% in 2010 to 14% in 2015; in the overweight BMI category, from 30% in 2010 to 18% in 2015; and in the obese BMI category, from 37% in 2010 to 24% in 2015. Similarly, the prevalence significantly decreased among boys in the healthy weight BMI category, from 27% in 2010 to 17% in 2015; in the overweight BMI category, from 35% in 2010 to 26% in 2015; and in the obese BMI category, from 48% in 2010 to 35% in 2015.

Table 11.15 Prevalence of a television in the bedroom among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015					2010
	Year K	Year 2	Year 4	Year 6	All years	All years
ALL						
Locality						
Urban (ref)	12.9 (2.0)	13.3 (2.1)	14.9 (2.3)	25.4 (2.9)	16.4 (2.0)	**27.6 (2.2) b**
Rural	13.6 (3.7)	17.8 (3.3)	21.9 (3.1)	31.2 (4.5)	21.3 (2.9)	27.7 (7.8)
SES						
Low	**19.9 (3.7) a**	**25.1 (4.1) a**	**23.9 (1.6) a**	**36.2 (2.7) a**	**26.0 (2.1) a**	**40.1 (3.7) b**
Middle	**15.2 (3.7) a**	**15.7 (2.2) a**	**23.1 (3.0) a**	**29.1 (3.5) a**	**20.9 (2.6) a**	25.4 (2.4)
High (ref)	8.5 (1.5)	8.0 (1.4)	7.6 (2.0)	19.5 (3.2)	10.5 (1.6)	**17.9 (2.7) b**
Cultural background						
English-speaking (ref)	13.5 (1.9)	14.8 (1.9)	17.5 (2.1)	27.5 (2.6)	18.2 (1.9)	**28.0 (2.3) b**
European	4.1 (4.1)	17.1 (7.6)	6.9 (6.8)	20.2 (9.0)	13.0 (4.6)	23.4 (5.4)
Middle Eastern	11.8 (2.7)	9.0 (4.7)	18.1 (3.9)	29.2 (5.6)	16.5 (1.7)	**28.6 (2.9) b**
Asian	12.2 (4.7)	9.4 (3.3)	**2.4 (1.8) a**	**10.0 (3.7) a**	**8.9 (2.4) a**	**23.0 (3.0) b**
BMI category						
Thin	15.8 (4.0)	8.1 (4.0)	9.7 (3.2)	22.8 (5.1)	14.3 (2.2)	17.5 (3.2)
Healthy weight (ref)	11.3 (1.7)	12.7 (1.6)	15.2 (2.2)	24.4 (2.7)	15.6 (1.6)	**25.9 (2.2) b**
Overweight	11.0 (2.9)	17.3 (4.6)	18.5 (3.1)	**34.9 (3.3) a**	**21.9 (2.4) a**	**32.7 (2.7) b**
Obese	**33.2 (6.5) a**	**23.0 (6.3) a**	**30.2 (4.4) a**	31.9 (5.3)	**29.4 (3.4) a**	**42.2 (3.0) b**

	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
GIRLS												
Locality												
Urban (ref)	12.6	(1.9)	11.9	(2.1)	13.1	(2.3)	19.4	(3.6)	14.1	(2.0)	**25.9**	**(2.2) b**
Rural	13.1	(3.9)	**21.7**	**(4.3) a**	17.9	(2.6)	23.1	(4.4)	18.9	(2.9)	30.5	(9.7)
SES												
Low	**19.3**	**(4.2) a**	**24.7**	**(4.1) a**	**19.6**	**(2.1) a**	**26.2**	**(3.9) a**	**22.3**	**(1.8) a**	**39.7**	**(4.1) b**
Middle	12.1	(2.5)	**18.1**	**(3.2) a**	**19.7**	**(2.9) a**	23.1	(5.3)	**18.2**	**(2.7) a**	22.2	(2.0)
High (ref)	10.1	(2.2)	6.4	(1.3)	6.9	(2.2)	14.7	(3.3)	9.4	(1.7)	**18.3**	**(3.2) b**
Cultural background												
English-speaking (ref)	12.5	(1.8)	13.7	(1.9)	15.5	(2.1)	21.0	(3.2)	15.6	(1.9)	**27.0**	**(2.4) b**
European	6.5	(6.4)	31.5	(15.3)	na		26.9	(12.5)	18.0	(6.2)	15.2	(7.1)
Middle Eastern	7.3	(4.4)	12.3	(6.1)	15.4	(3.9)	15.8	(8.6)	12.7	(2.9)	**24.5**	**(5.4) b**
Asian	18.3	(6.2)	10.5	(4.2)	**1.1**	**(1.1) a**	**4.2**	**(4.0) a**	10.8	(3.0)	**20.8**	**(4.2) b**
BMI category												
Thin	4.4	(3.0)	5.4	(3.8)	6.3	(3.1)	21.7	(5.6)	10.3	(2.5)	16.2	(3.4)
Healthy weight (ref)	12.4	(1.9)	12.8	(1.9)	13.8	(2.3)	17.9	(2.9)	14.1	(1.5)	**25.1**	**(2.3) b**
Overweight	10.3	(3.3)	17.2	(5.6)	16.8	(3.4)	**27.6**	**(5.4) a**	18.4	(3.2)	**29.9**	**(3.7) b**
Obese	29.6	(11.6)	21.3	(5.8)	21.7	(5.4)	22.8	(6.1)	**23.7**	**(4.3) a**	**36.6**	**(4.0) b**
BOYS												
Locality												
Urban (ref)	13.2	(2.8)	14.8	(2.9)	16.8	(3.1)	31.6	(3.8)	18.8	(2.4)	**29.3**	**(2.5) b**
Rural	14.1	(4.0)	14.2	(3.7)	25.9	(4.0)	38.4	(5.3)	23.5	(3.1)	25.7	(7.0)
SES												
Low	**20.5**	**(4.3) a**	**25.5**	**(6.7) a**	**28.0**	**(2.5) a**	**45.3**	**(2.7) a**	**29.5**	**(2.9) a**	**40.5**	**(4.1) b**
Middle	**18.6**	**(5.8) a**	13.2	(2.6)	**27.0**	**(5.2) a**	34.8	(4.4)	**23.6**	**(3.0) a**	28.2	(3.0)
High (ref)	6.9	(1.7)	9.9	(2.3)	8.2	(2.6)	24.7	(4.6)	11.7	(1.8)	**17.6**	**(2.5) b**
Cultural background												
English-speaking (ref)	14.4	(2.7)	16.0	(2.8)	19.7	(2.6)	34.1	(3.4)	20.8	(2.2)	**28.8**	**(2.5) b**
European	na		6.5	(6.1)	13.8	(13.0)	9.4	(9.9)	**7.3**	**(4.0) a**	**33.1**	**(10.3) b**
Middle Eastern	15.8	(3.3)	5.4	(4.5)	21.3	(7.4)	41.8	(7.0)	20.5	(2.0)	**32.3**	**(2.8) b**
Asian	na		7.9	(3.9)	4.3	(4.1)	**15.3**	**(6.4) a**	**6.2**	**(2.0) a**	**24.9**	**(2.7) b**
BMI category												
Thin	**27.6**	**(7.7) a**	11.5	(7.8)	13.4	(4.7)	25.3	(12.8)	19.5	(3.4)	18.7	(3.9)
Healthy weight (ref)	10.1	(2.5)	12.7	(2.3)	16.5	(3.0)	30.8	(4.0)	17.0	(2.1)	**26.5**	**(2.5) b**
Overweight	12.0	(5.1)	17.4	(4.9)	20.5	(4.2)	40.4	(4.8)	**25.5**	**(2.7) a**	**35.4**	**(3.1) b**
Obese	**37.3**	**(9.1) a**	24.9	(11.0)	**39.5**	**(6.9) a**	40.2	(6.2)	**35.4**	**(4.2) a**	**47.9**	**(4.5) b**

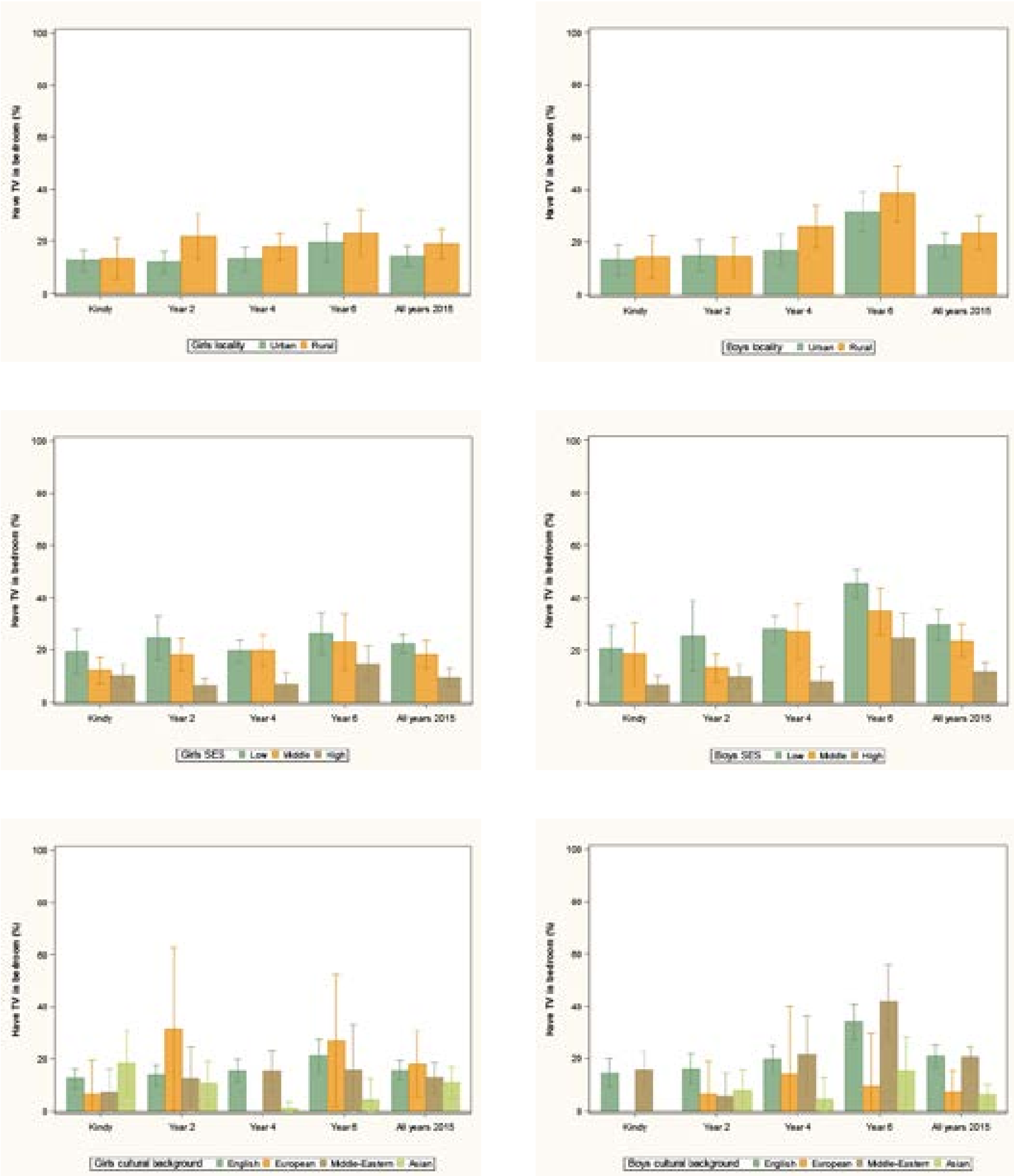
a *Indicates statistically significant difference at $P < 0.05$. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

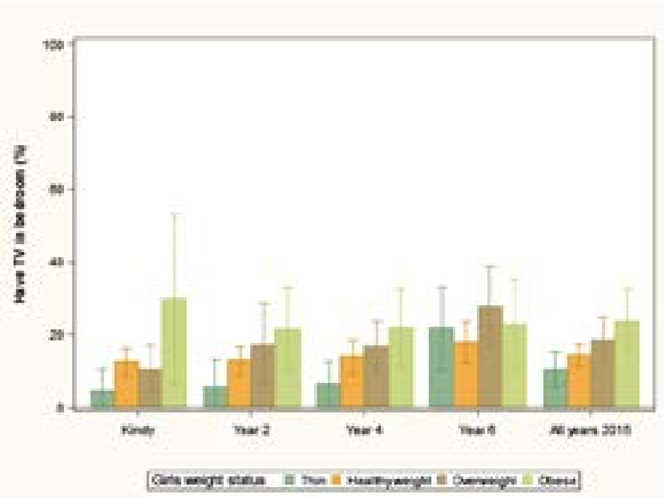
b *Indicates statistically significant difference at $P < 0.05$ between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

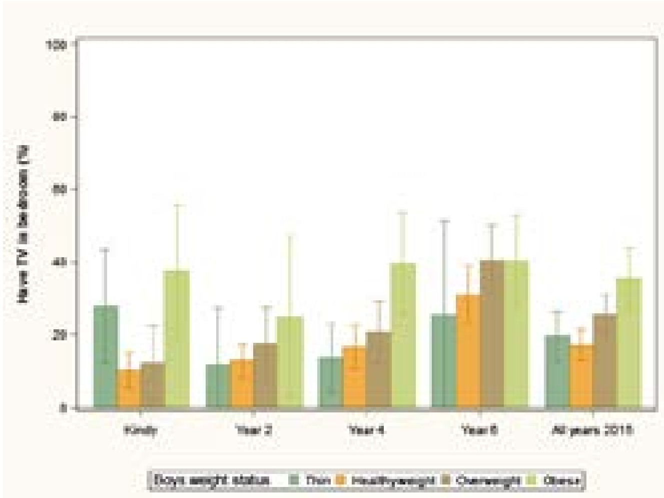
na *Indicates statistical significance could not be calculated due to low numbers.*

No letter means there was no statistical difference.

Figure 11.15 Prevalence of a television in the bedroom among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)







PARENTAL RULES ON CHILD'S SCREEN-TIME

There are good reasons to reduce children's screen time. Excessive screen time is associated with a range of adverse health outcomes in children, including metabolic syndrome,[27] unfavourable body composition, decreased fitness, lowered scores for self-esteem and pro-social behaviour, and decreased academic achievement.[5] Screen time is the most popular sedentary leisure time activity of children with the majority of children exceeding the recommended daily limits on screen time of *no more than 2 hours a day.*[21] Screen time is the most modifiable of all sedentary behaviours and strategies such as imposing rules on screen time hold promise to reduce children's screen use.

The family plays a pivotal role in shaping children's screen time use and therefore it is important to engage families in efforts to reduce children's screen time. Qualitative research suggest the challenges faced by parents to reduce or restrict screen time, and television in particular, are that limiting children's television time will cause conflict in the home; increase bickering between siblings; impose on parents own time; require monetary and community resources for other forms of entertainment; and that televisions in the home offers cheap entertainment, free babysitting and educational opportunities.[28]

Other research suggests parental attitudes that imposing screen time rules will help their child academically, or improve family communications and relationships, and that increasing awareness that other parents impose screen time rules to create social norm play an important role in parental intention to apply rules to children's screen time, and that targeting these beliefs will assist strategies to reduce screen time.[29]

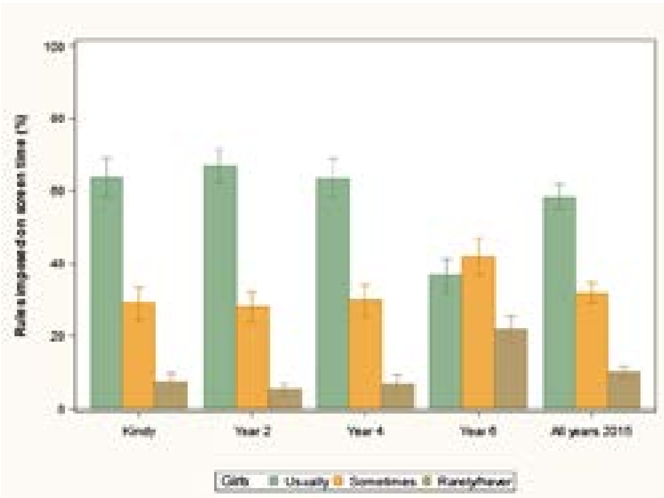
The following section reports on the prevalence of parental rules for children's screen time. Table 11.16 and Figure 11.16 show the prevalence of parents imposing screen time rules among children by sex and year group in 2015, and in 2010 for comparison. Overall, 59% of children 'usually' had parental rules on screen time and 10% never/rarely had screen time rules. The prevalence of parents never/rarely imposing screen time rules has significantly declined since 2010, from 13% to 9% in 2015; while the prevalence of sometimes having rules significantly increased, from 27% in 2010 to 31% in 2015. Among girls the prevalence of parents never/rarely imposing screen time rules has significantly declined since 2010, from 15% to 10% in 2015; while the prevalence of sometimes having rules significantly increased, from 26% in 2010 to 32% in 2015.

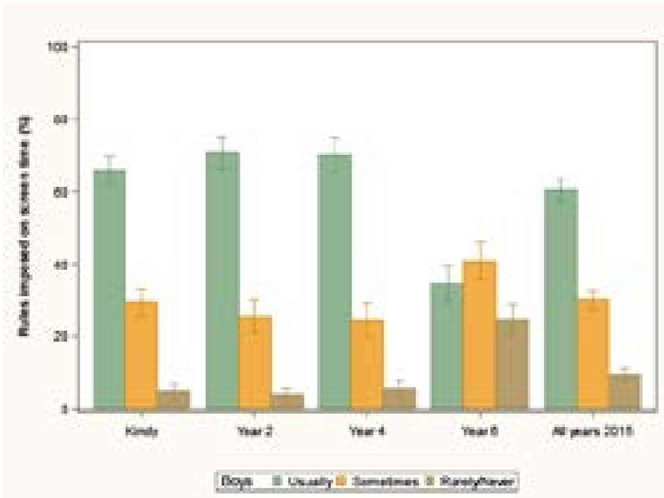
Table 11.16 Prevalence of parental rules on child's screen time among children in primary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
ALL												
Usually	64.8	(1.8)	68.7	(1.7)	66.7	(2.1)	35.6	(1.7)	59.3	(1.5)	60.1	(1.3)
Sometimes	29.1	(1.6)	26.8	(1.6)	27.2	(2.0)	41.3	(1.9)	30.9	(1.2)	**26.9**	**(1.0) b**
Rarely/never	6.1	(0.9)	4.6	(0.6)	6.1	(0.9)	23.2	(1.7)	9.7	(0.7)	**13.1**	**(0.8) b**
GIRLS												
Usually	63.8	(2.6)	66.8	(2.3)	63.5	(2.6)	36.6	(2.3)	58.2	(1.7)	59.4	(1.7)
Sometimes	28.9	(2.2)	28.0	(2.1)	29.7	(2.1)	41.8	(2.5)	31.8	(1.4)	**26.0**	**(1.3) b**
Rarely/never	7.4	(1.2)	5.2	(0.9)	6.8	(1.2)	21.7	(1.9)	10.0	(0.8)	**14.6**	**(1.1) b**
BOYS												
Usually	65.9	(1.9)	70.7	(2.2)	70.0	(2.4)	34.5	(2.5)	60.5	(1.6)	60.7	(1.5)
Sometimes	29.4	(1.9)	25.4	(2.2)	24.5	(2.3)	40.8	(2.5)	30.0	(1.3)	27.7	(1.2)
Rarely/never	4.8	(1.2)	3.9	(0.8)	5.4	(1.2)	24.7	(2.0)	9.5	(0.8)	11.6	(1.0)

b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 11.16 Prevalence of parental rules on child's screen time among children in primary school by sex and year group in 2015 (%, 95%CI)





SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that one in ten (10%) children's parents never/rarely impose rules on their child's screen time. Table 11.17 and Figure 11.17 show the prevalence of parents never/rarely imposing screen time rules among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, prevalence of parents never/rarely imposing screen time rules was significantly higher among girls from rural areas (13%), compared with girls from urban areas (9%).

Change between 2010-2015: Overall, the prevalence of parents never/rarely imposing screen time rules significantly decreased among children from urban areas, from 13% in 2010 to 9% in 2015; and among girls from urban areas, from 14% in 2010 to 9% in 2015.

Socio-economic status

2015: Overall, the prevalence of parents never/rarely imposing screen time rules was significantly higher among children from middle SES backgrounds (11%), compared with children from high SES backgrounds (8%); and among girls from low (12%) and middle (11%) SES backgrounds, compared with girls from high SES backgrounds (8%).

Change between 2010-2015: Overall, the prevalence of parents never/rarely imposing screen time rules significantly decreased among children from high SES backgrounds, from 11% in 2010 to 8% in 2015. The prevalence significantly decreased among girls from low SES backgrounds (from 19% in 2010 to 12% in 2015) and from high SES backgrounds (from 12% in 2010 to 8% in 2015); and among boys from high SES backgrounds, from 11% in 2010 to 8% in 2015.

Cultural background

2015: The prevalence of parents never/rarely imposing screen time rules was significantly lower among girls from Asian cultural backgrounds (7%), compared with girls from English-speaking backgrounds (10%).

Change between 2010-2015: Overall, the prevalence of parents never/rarely imposing screen time rules significantly decreased among children from English-speaking backgrounds, from 14% in 2010 to 10% in 2015. The prevalence significantly decreased among girls from English-speaking backgrounds (from 15% in 2010 to 10% in 2015), and from Asian cultural backgrounds (from 12% in 2010 to 7% in 2015); and among boys from English-speaking backgrounds, from 13% in 2010 to 10% in 2015.

Weight status

2015: Overall, the prevalence of parents never/rarely imposing screen time rules was significantly higher among children in the obese BMI category (15%), compared with children in a healthy weight BMI category (9%). The prevalence was significantly higher among girls in the obese BMI category (15%), compared with girls in the healthy weight BMI category (9%).

Change between 2010-2015: Overall, the prevalence of parents never/rarely imposing screen time rules significantly decreased among children in the healthy weight BMI category, from 13% in 2010 to 9% in 2015. The prevalence significantly decreased among girls in the healthy weight BMI category, from 14% in 2010 to 9% in 2015; and among boys in the healthy weight BMI category, from 12% in 2010 to 9% in 2015.

Table 11.17 Prevalence of parents never/rarely imposing screen time rules among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
ALL												
Locality												
Urban (ref)	6.0	(1.0)	4.4	(0.6)	5.9	(1.0)	21.8	(1.8)	9.2	(0.7)	**12.9**	**(0.8) b**
Rural	6.5	(2.0)	5.3	(1.6)	6.9	(2.0)	27.5	(4.2)	11.7	(1.7)	14.5	(2.8)
SES												
Low	4.2	(1.2)	5.9	(1.6)	7.7	(2.4)	26.8	(5.2)	10.9	(1.9)	15.4	(1.7)
Middle	**9.6**	**(1.7) a**	4.3	(0.8)	5.5	(1.4)	23.6	(2.5)	**10.9**	**(0.9) a**	12.5	(1.1)
High (ref)	4.5	(0.9)	4.1	(0.8)	5.8	(1.1)	20.8	(2.3)	8.2	(0.8)	**11.4**	**(1.0) b**
Cultural background												
English-speaking (ref)	6.1	(1.0)	4.8	(0.6)	5.8	(0.9)	24.0	(1.9)	10.0	(0.8)	**13.8**	**(0.9) b**
European	na		na		5.2	(4.7)	17.9	(10.3)	5.4	(2.6)	11.0	(4.2)
Middle Eastern	11.7	(5.8)	5.9	(2.9)	6.0	(5.0)	12.9	(5.7)	9.0	(2.8)	8.0	(1.7)
Asian	4.2	(2.0)	1.5	(1.5)	9.6	(2.7)	22.6	(6.7)	7.8	(1.2)	8.9	(1.5)
BMI category												
Thin	3.3	(1.9)	4.6	(3.6)	6.0	(2.5)	**31.8**	**(6.9) a**	11.4	(2.5)	15.6	(2.6)
Healthy weight (ref)	6.2	(1.1)	4.4	(0.8)	5.5	(1.0)	20.7	(1.7)	9.0	(0.7)	**12.8**	**(0.8) b**
Overweight	2.5	(1.2)	2.2	(1.2)	5.2	(1.9)	**28.1**	**(3.1) a**	11.1	(1.2)	12.5	(1.4)
Obese	11.3	(4.9)	**12.8**	**(3.9) a**	**12.1**	**(3.9) a**	24.2	(4.6)	**14.8**	**(2.3) a**	15.7	(2.4)
GIRLS												
Locality												
Urban (ref)	6.8	(1.2)	5.5	(1.0)	6.0	(1.4)	19.9	(2.0)	9.3	(0.9)	**14.3**	**(1.1) b**
Rural	9.5	(3.5)	3.7	(1.5)	9.4	(2.7)	27.7	(4.0)	**12.7**	**(1.4) a**	17.0	(2.9)
SES												
Low	5.8	(2.3)	7.1	(3.0)	9.8	(3.1)	25.9	(5.4)	**11.9**	**(1.5) a**	**18.8**	**(1.9) b**
Middle	**11.6**	**(2.3) a**	5.4	(1.2)	7.2	(2.0)	21.6	(3.2)	**11.4**	**(1.3) a**	13.7	(1.3)
High (ref)	5.1	(1.3)	4.4	(1.0)	4.9	(1.5)	19.6	(2.3)	8.0	(0.9)	**11.3**	**(1.6) b**
Cultural background												
English-speaking (ref)	7.6	(1.3)	5.2	(0.8)	6.3	(1.2)	22.8	(2.2)	10.3	(0.9)	**15.2**	**(1.2) b**
European	na		na		10.4	(9.1)	14.5	(10.7)	5.9	(3.5)	18.0	(7.0)
Middle Eastern	15.5	(9.2)	**11.9**	**(5.5) a**	8.4	(8.7)	**6.1**	**(3.2) a**	10.6	(2.8)	9.0	(2.2)
Asian	4.2	(2.5)	2.5	(2.5)	9.6	(3.9)	17.7	(8.4)	**6.9**	**(1.2) a**	**11.7**	**(2.0) b**
BMI category												
Thin	6.5	(3.9)	6.5	(6.3)	6.3	(3.6)	**31.3**	**(6.4) a**	13.9	(3.2)	16.7	(3.4)
Healthy weight (ref)	7.2	(1.3)	4.7	(1.0)	6.2	(1.3)	18.8	(2.2)	9.0	(0.9)	**13.6**	**(1.2) b**
Overweight	3.5	(2.0)	2.1	(1.5)	6.2	(2.7)	**28.2**	**(4.3) a**	10.3	(1.6)	14.7	(1.8)
Obese	15.0	(7.7)	**17.6**	**(5.2) a**	10.7	(4.6)	18.9	(7.1)	**15.2**	**(2.5) a**	22.1	(4.2)

	2015										2010	
	Year K		Year 2		Year 4		Year 6		All years		All years	
BOYS												
Locality												
Urban (ref)	5.1	(1.4)	3.0	(0.7)	5.8	(1.3)	23.8	(2.2)	9.1	(0.8)	11.5	(1.0)
Rural	3.5	(2.1)	6.8	(2.6)	4.5	(3.0)	27.3	(4.7)	10.8	(2.2)	12.5	(3.0)
SES												
Low	2.7	(1.3)	5.0	(2.6)	5.7	(3.4)	27.6	(5.8)	10.0	(2.5)	12.2	(2.1)
Middle	7.3	(2.2)	3.2	(1.1)	3.6	(1.3)	25.3	(3.0)	10.5	(1.0)	11.4	(1.5)
High (ref)	4.0	(1.4)	3.8	(1.0)	6.7	(1.5)	22.1	(3.3)	8.4	(0.9)	**11.4**	**(1.3) b**
Cultural background												
English-speaking (ref)	4.7	(1.2)	4.3	(0.9)	5.3	(1.1)	25.2	(2.2)	9.7	(0.8)	**12.5**	**(1.1) b**
European	na		na		na		23.5	(20.7)	4.9	(4.5)	2.9	(2.9)
Middle Eastern	8.2	(5.5)	na		3.1	(3.3)	19.1	(9.9)	7.5	(3.6)	7.1	(3.5)
Asian	4.1	(4.0)	na		9.5	(5.0)	27.0	(9.6)	9.3	(2.7)	6.2	(1.8)
BMI category												
Thin	na		2.4	(2.2)	5.6	(4.1)	33.0	(11.2)	8.3	(2.8)	14.4	(3.4)
Healthy weight (ref)	5.3	(1.5)	4.2	(1.2)	4.9	(1.2)	22.5	(2.0)	8.9	(0.9)	**12.0**	**(1.1) b**
Overweight	1.3	(1.2)	2.3	(2.3)	4.1	(2.2)	28.1	(4.2)	11.9	(1.7)	10.5	(1.9)
Obese	7.2	(5.5)	7.7	(4.8)	**13.7**	**(6.6) a**	29.3	(6.3)	14.2	(3.6)	9.3	(2.8)

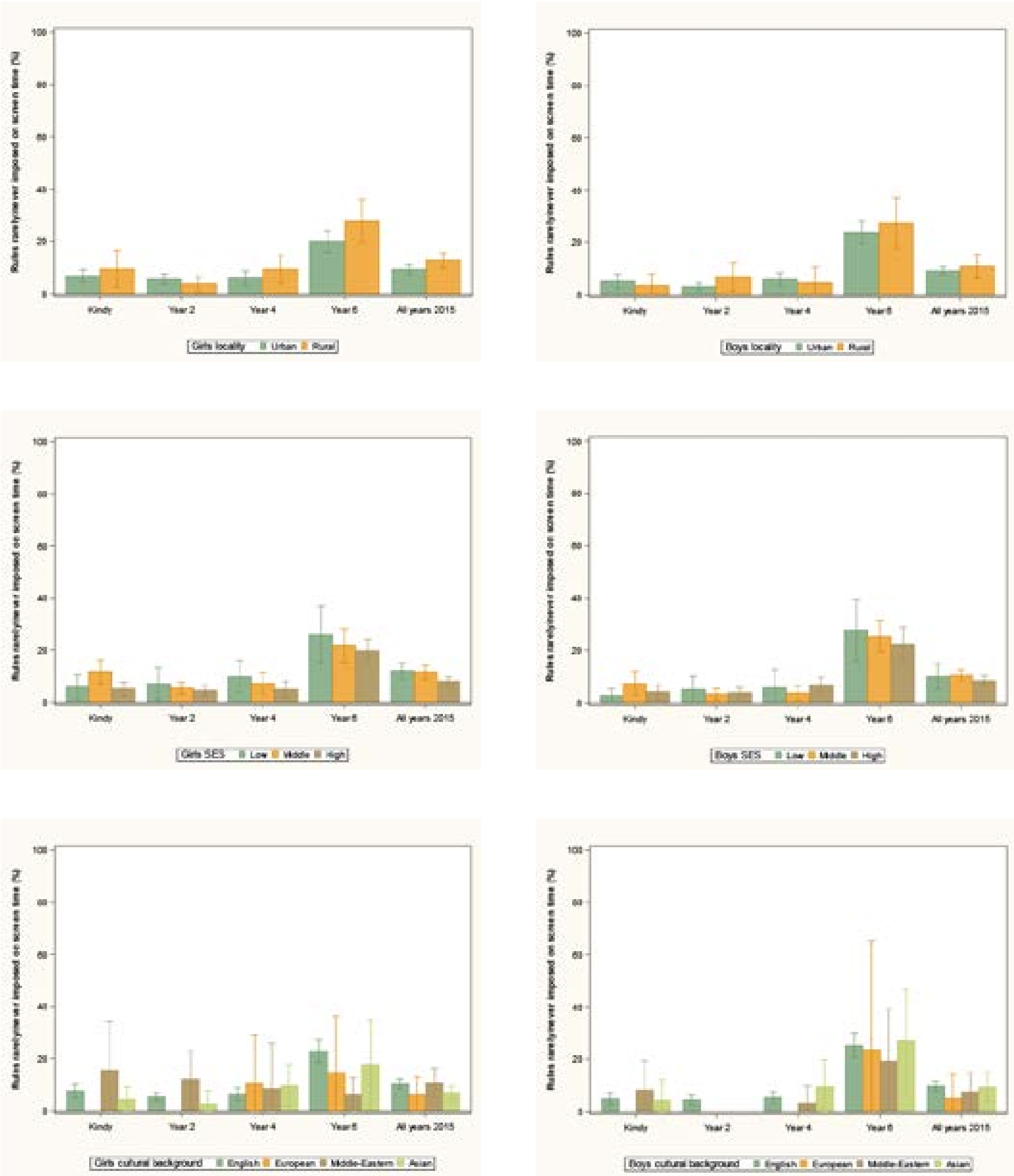
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

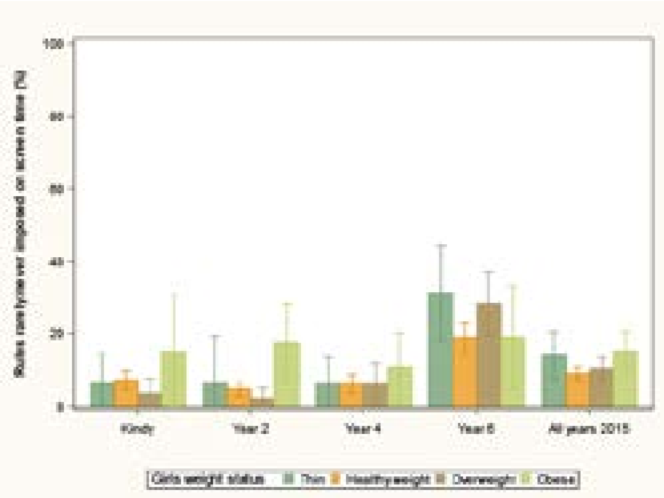
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all children for each socio-demographic characteristic.*

na *Indicates statistical significance could not be calculated due to low numbers.*

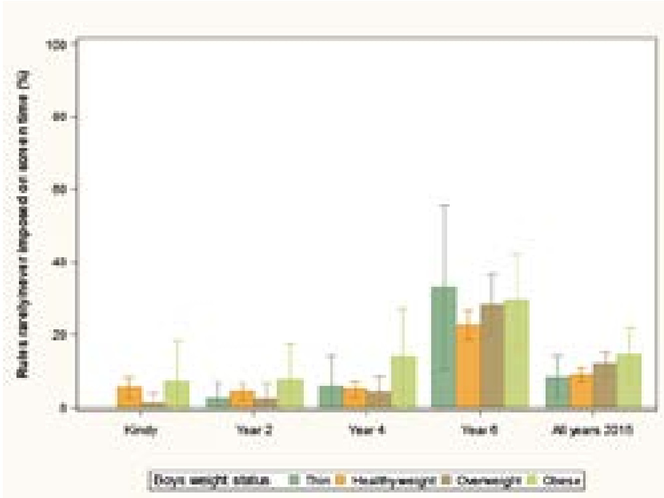
No letter means there was no statistical difference.

Figure 11.17 Prevalence of parents never/rarely imposing screen time rules among children in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)





Rules rarely/never imposed on screen time (%)
100
80
60
40
20
0
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthyweight
Overweight
Obese



Rules rarely/never imposed on screen time (%)
100
80
60
40
20
0
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys weight status
Thin
Healthyweight
Overweight
Obese

SUMMARY OF THE SEDENTARY BEHAVIOURS OF CHILDREN IN PRIMARY SCHOOL

The table below summarises the indicators of sedentary behaviour ('sitting time') in children in primary school.

Sitting indicator	Guideline or recommendation	SPANS cut point	Time (median) or prevalence		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
WEEKDAYS					
Total sitting time	To break up long periods of sitting as often as possible[19]	None	3:10 hours	3:05 hours	No significance testing done
Screen time	Limit use of electronic media for entertainment (e.g., television, seated electronic games and computer use) to no more than two hours a day – lower levels are associated with reduced health risks[19]	<2 hours/day	58%	62%	**2015**: Overall, the prevalence of meeting the recommended daily limits on screen time on a weekday was significantly higher among girls and significantly lower among children from low SES backgrounds, Middle Eastern cultural backgrounds and the overweight and obese BMI categories **Change between 2010-2015:** Overall, there were no significant changes in meeting the recommended daily limits on screen time on weekdays between 2010 and 2015. Within subgroups, meeting the recommended daily limits on screen time on weekdays significantly increased among girls from European cultural backgrounds
WEEKEND DAYS					
Total sitting time	To break up long periods of sitting as often as possible[19]	None	5:50 hours	6:04 hours	No significance testing done
Screen time	Limit use of electronic media for entertainment (e.g. television, seated electronic games and computer use) to no more than two hours a day – lower levels are associated with reduced health risks[19]	<2 hours/day	19%	21%	**2015:** Overall, the prevalence of meeting the recommended daily limits on screen time on a weekend day was significantly higher among girls, and significantly lower among children from low SES backgrounds, Middle Eastern and Asian cultural backgrounds, and in the obese BMI category **Change between 2010-2015:** Overall, there were no significant changes in meeting the recommended daily limits on screen time on weekend days between 2010 and 2015. Within subgroups, meeting the recommended daily limits on screen time on weekend days significantly increased among children in the overweight BMI category

Sitting indicator	Guideline or recommendation	SPANS cut point	Time (median) or prevalence		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
HOME SCREEN ENVIRONMENT					
Awareness of national recommended daily limits on screen time	Limit use of electronic media for entertainment (e.g., television, seated electronic games and computer use) to no more than two hours a day – lower levels are associated with reduced health risks[19]	Don't know (recommendation)	47%	53% sig	**2015:** Overall, the prevalence of not knowing the recommendation was significantly higher among girls and among children from Asian cultural backgrounds **Change between 2010-2015:** Overall, the proportion of children who did not know the recommended daily limits on screen time significantly increased between 2010 and 2015. Within subgroups, not knowing the recommended daily limits on screen time significantly increased among children from urban and rural areas, each SES tertile, English-speaking, Middle Eastern and Asian cultural backgrounds, and thin and healthy weight BMI categories
Television in the bedroom	There are no specific guidelines	TV in bedroom	28%	17% sig	**2015:** Overall, the prevalence of TV in the bedroom was significantly lower among girls and among children from Asian cultural backgrounds, and was significantly higher among children from low and middle SES backgrounds and children in the overweight and obese BMI categories **Change between 2010-2015:** Overall, the proportion of children with a TV in their bedroom significantly decreased between 2010 and 2015. Within subgroups, TV in the bedroom significantly decreased among children from urban areas, low and high SES backgrounds, English-speaking, Middle Eastern and Asian backgrounds, and those in the healthy weight, overweight and obese BMI categories
Parent imposes screen time rules	There are no specific guidelines	Never/rarely	13%	10% sig	**2015:** Overall, the prevalence of parents imposing screen time rules was significantly higher among children from middle SES backgrounds and in the obese BMI category **Change between 2010-2015:** Overall, the proportion of children with parents imposing screen time rules significantly decreased between 2010 and 2015. Within subgroups, parents imposing screen time rules significantly decreased among children from urban areas, high SES, English-speaking backgrounds and those in the healthy weight BMI category

sig *Indicates statistically significant difference at P < 0.05; * Comparisons are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

SECONDARY SCHOOL

The following section presents the self-reported findings of sedentary behaviour among adolescents in secondary school. The estimates need to be interpreted along with their standard error (SE) or the inter-quartile range (IQR) value; a proportionally large SE or IQR means a less precise estimate.

WEEKDAY SITTING

The following section reports on the median total sitting time of adolescents on a weekday, outside of school hours. When considering change in total sitting time between 2010 and 2015 it is important to remember that playing on a smartphone or iPad/tablet was added to the 2015 questionnaire, and is included in the total time for 2015. This may account for an increase in sitting time between 2010 and 2015.

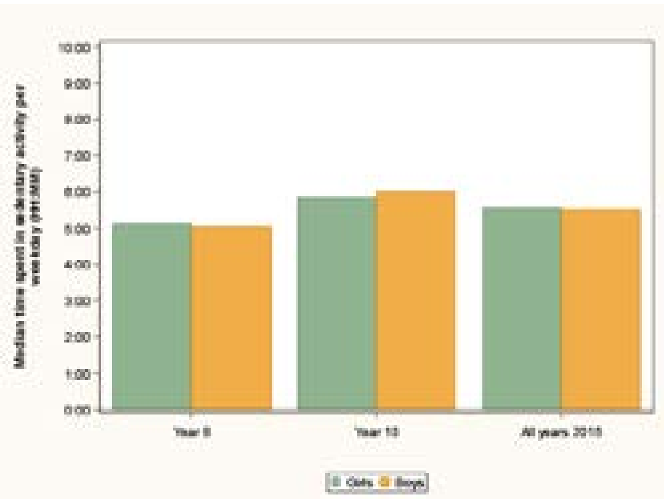
Table 11.18 and Figure 11.18 show the median daily time, in hours and minutes, that adolescents spent in total sitting time on a weekday, outside of school hours, by sex and year group in 2015, and in 2010 for comparison. Overall, adolescents spent 5 hours and 32 hours minutes in total sitting time (outside of school hours) on a usual weekday in 2015. Total daily sitting time appeared to be broadly consistent between boys and girls within year groups, and Year 10 adolescents reported 51 minutes more sitting time than Year 8. Between 2010 and 2015, adolescents' total daily sitting time increased 13 minutes, and 28 minutes among girls. The temporal increase may be due to the inclusion of the use of smartphones and tablets in the 2015 survey.

Table 11.18 Median total daily sitting time on a weekday, outside of school hours, among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (hours: minutes, IQR)

	2015			2010
	Year 8	Year 10	All years	All years
WEEKDAY				
All	5:05 (4:41)	5:54 (4:18)	5:32 (4:23)	5:19 (3:26)
Girls	5:07 (5:02)	5:50 (3:55)	5:34 (4:31)	5:06 (3:27)
Boys	5:02 (4:12)	6:00 (4:23)	5:31 (4:23)	5:30 (3:26)

Note: No significance testing was conducted.

Figure 11.18 Median total daily sitting time on a weekday, outside of school hours, among adolescents in secondary school by sex and year group in 2015 (hours:minutes)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that adolescents spent 5 hours and 32 minutes (median) in total sitting time on a weekday, outside of school hours. Table 11.19 and Figure 11.19 show the median total sitting time among adolescents on a weekday (outside of school hours) by socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison. Differences between socio-demographic characteristics were not statistically tested.

Locality

2015: Overall, adolescents from urban areas spent 47 minutes more in total daily sitting time on a weekday, outside of school hours, compared with adolescents from rural areas.

Change between 2010-2015: Overall, total daily sitting time increased 18 minutes among adolescents from urban areas and 19 minutes among adolescents from rural between 2010 and 2015.

Socio-economic status

2015: Overall, total daily sitting time appeared fairly consistent across SES tertiles. Adolescents from low SES backgrounds spent 12 minutes more in total daily sitting time compared with adolescents from high SES backgrounds.

Change between 2010-2015: Adolescents from low SES backgrounds spent 29 minutes more in total daily sitting time in 2015, compared with 2010. There appeared to be little change in total daily sitting time among adolescents from middle and high SES backgrounds between 2010 and 2015.

Cultural background

2015: Overall, total daily sitting time was higher among adolescents from Middle Eastern (6:36 hours) and Asian (6:44 hours) cultural backgrounds, compared with adolescents from English-speaking backgrounds (5:21 hours).

Change between 2010-2015: Overall, total daily sitting time increased among adolescents from English-speaking backgrounds (6 minutes), Middle Eastern (48 minutes) and Asian cultural backgrounds (44 minutes), and decreased by 69 minutes among adolescents from uropean cultural backgrounds between 2010 and 2015.

Weight status

2015: Overall, total daily sitting time was higher among adolescents in the overweight (4 minutes) and obese (15 minutes) BMI categories, and 34 minutes lower among adolescents in the thin BMI category, compared with adolescents in the healthy weight BMI category.

Change between 2010-2015: Overall, total daily sitting time decreased among adolescents in the thin (31 minutes) and obese (3 minutes) BMI categories; and increased among adolescents in the healthy weight (17 minutes) and overweight (19 minutes) BMI categories.

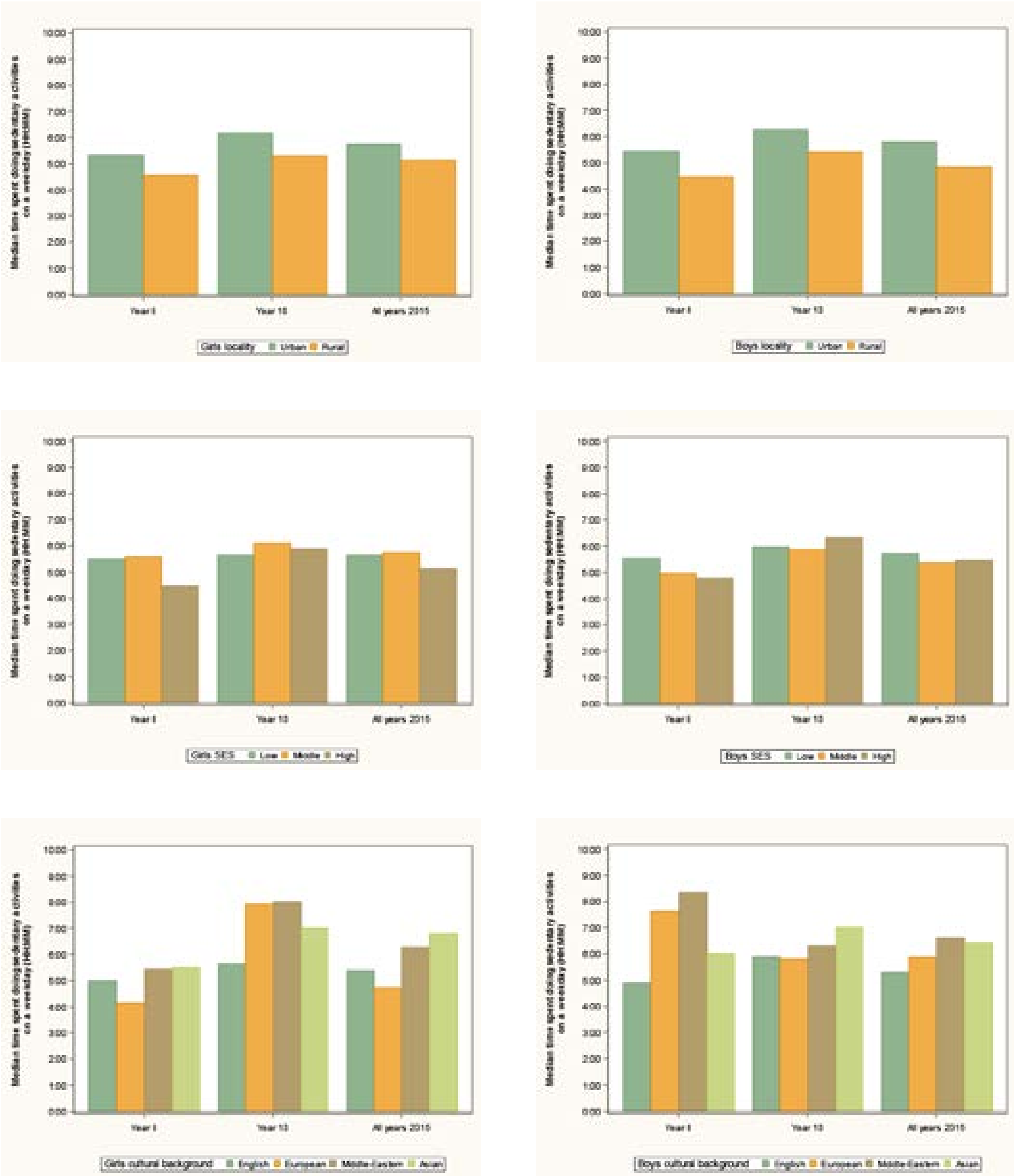
Table 11.19 Median total daily sitting time on a weekday, outside of school hours, among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (hours: minutes, IQR)

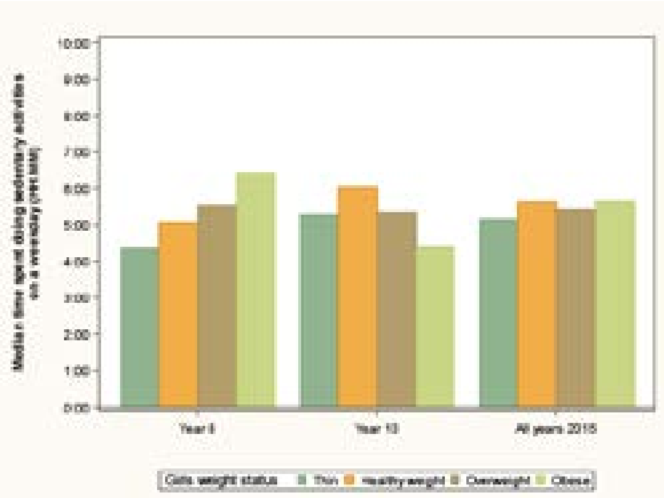
	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	5:23	(4:44)	6:12	(4:34)	5:47	(4:36)	5:29	(3:26)
Rural	4:31	(4:06)	5:20	(3:48)	5:00	(4:12)	4:41	(3:25)
SES								
Low	5:29	(5:07)	5:49	(4:06)	5:40	(4:32)	5:11	(3:32)
Middle	5:17	(4:32)	5:55	(4:17)	5:36	(4:28)	5:34	(3:34)
High (ref)	4:43	(4:01)	5:59	(4:14)	5:18	(4:16)	5:14	(3:10)
Cultural background								
English-speaking (ref)	4:56	(4:36)	5:46	(4:00)	5:21	(4:23)	5:15	(3:25)
European	4:26	(3:06)	5:54	(4:42)	5:06	(4:34)	6:15	(3:09)
Middle Eastern	6:16	(8:18)	6:39	(5:41)	6:36	(6:41)	5:48	(3:43)
Asian	5:49	(3:28)	7:01	(4:14)	6:44	(4:23)	6:00	(3:35)
BMI category								
Thin	4:12	(4:44)	5:20	(4:17)	4:59	(4:26)	5:30	(3:22)
Healthy weight (ref)	5:01	(4:19)	6:03	(4:08)	5:33	(4:15)	5:16	(3:23)
Overweight	5:37	(5:05)	5:32	(4:20)	5:37	(4:41)	5:18	(3:35)
Obese	5:54	(6:24)	5:43	(4:14)	5:48	(5:08)	5:51	(4:33)
GIRLS								
Locality								
Urban (ref)	5:20	(4:59)	6:10	(4:36)	5:45	(4:56)	5:14	(3:26)
Rural	4:34	(4:40)	5:18	(3:11)	5:08	(4:18)	4:24	(3:23)
SES								
Low	5:28	(5:44)	5:38	(3:41)	5:38	(4:24)	4:57	(3:20)
Middle	5:35	(5:18)	6:05	(4:04)	5:45	(4:57)	5:18	(3:33)
High (ref)	4:27	(3:57)	5:53	(4:10)	5:08	(4:18)	5:01	(3:17)
Cultural background								
English-speaking (ref)	5:00	(5:02)	5:40	(3:33)	5:23	(4:17)	5:02	(3:25)
European	4:09	(2:42)	7:55	(3:40)	4:45	(4:50)	5:10	(3:26)
Middle Eastern	5:26	(5:39)	8:02	(7:50)	6:16	(7:48)	5:08	(4:15)
Asian	5:31	(5:13)	7:00	(4:43)	6:48	(5:06)	5:50	(3:05)
BMI category								
Thin	4:21	(7:44)	5:16	(4:33)	5:09	(5:31)	5:12	(3:23)
Healthy weight (ref)	5:04	(4:35)	6:01	(3:54)	5:38	(4:09)	5:07	(3:27)
Overweight	5:33	(6:32)	5:20	(3:58)	5:24	(5:23)	4:49	(3:03)
Obese	6:26	(6:31)	4:24	(3:29)	5:39	(4:27)	5:16	(4:46)

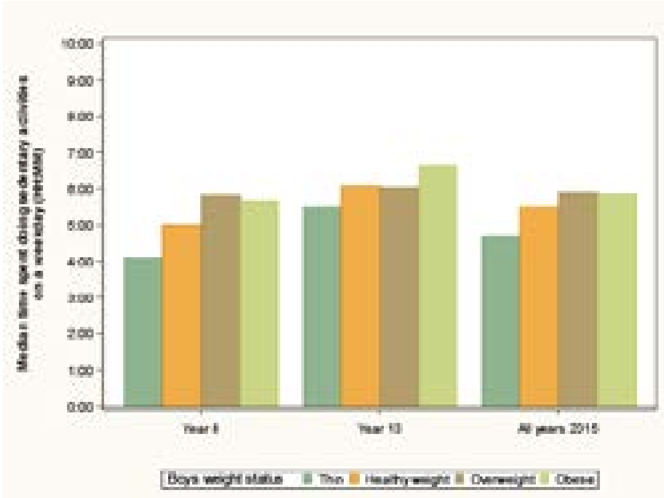
	2015						2010	
	Year 8		Year 10		All years		All years	
BOYS								
Locality								
Urban (ref)	5:26	(4:26)	6:16	(4:26)	5:48	(4:30)	5:44	(3:21)
Rural	4:28	(3:46)	5:24	(4:04)	4:51	(4:00)	4:43	(3:37)
SES								
Low	5:32	(4:42)	5:58	(4:29)	5:43	(4:37)	5:20	(3:35)
Middle	4:58	(3:51)	5:52	(4:24)	5:21	(4:09)	5:48	(3:44)
High (ref)	4:47	(3:54)	6:19	(4:17)	5:26	(4:16)	5:25	(3:02)
Cultural background								
English-speaking (ref)	4:54	(4:12)	5:54	(4:26)	5:18	(4:26)	5:24	(3:19)
European	7:38	(5:33)	5:50	(3:16)	5:53	(5:49)	7:11	(2:27)
Middle Eastern	8:21	(8:10)	6:18	(5:25)	6:38	(5:32)	6:06	(3:25)
Asian	6:00	(2:41)	7:00	(4:01)	6:27	(4:02)	6:03	(3:49)
BMI category								
Thin	4:05	(3:26)	5:30	(4:05)	4:42	(3:39)	5:54	(3:29)
Healthy weight (ref)	5:00	(4:07)	6:04	(4:19)	5:30	(4:26)	5:24	(3:17)
Overweight	5:49	(4:24)	6:02	(4:22)	5:53	(4:22)	5:47	(3:27)
Obese	5:39	(6:25)	6:38	(6:16)	5:51	(5:42)	6:04	(4:23)

Note: No significance testing was conducted.

Figure 11.19 Median total daily sitting time on a weekday, outside of school hours, among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (hours:minutes)







DOMAINS OF SEDENTARY BEHAVIOUR

While watching television is the most popular sitting activity among adolescents, there are a range of other activities that adolescents do while sitting or lying down.[17] Many of these activities serve important social and cognitive developmental skills such as reading, sitting with friends, listening to or playing music, hobbies and crafts, homework, religious and cultural activities and passive transportation.[17]

Measuring total sitting time is difficult; objective measures (e.g., inclinometers, accelerometers) provide no contextual information and self-report is prone to recall and social biases. The benefit of self-report is that it can provide contextual information on different sedentary activities. For SPANS, adolescents reported the amount of time spent in 13 sedentary activities for each day of the week, outside of school hours, and 14 sedentary activities for each weekend day. For the analysis, the activities were categorised into five separate domains of sedentary behaviour: educational, passive travel, cultural, social, and screen time activities.

Monitoring specific domains of sitting is important to understand the types of sitting adolescents engage in and to examine temporal changes in adolescents' sedentary behaviour. In 2015, information on time spent playing on a smartphone or iPad/tablet was added to the questionnaire because of the increased uptake and use of these screen devices among adolescents.[6]

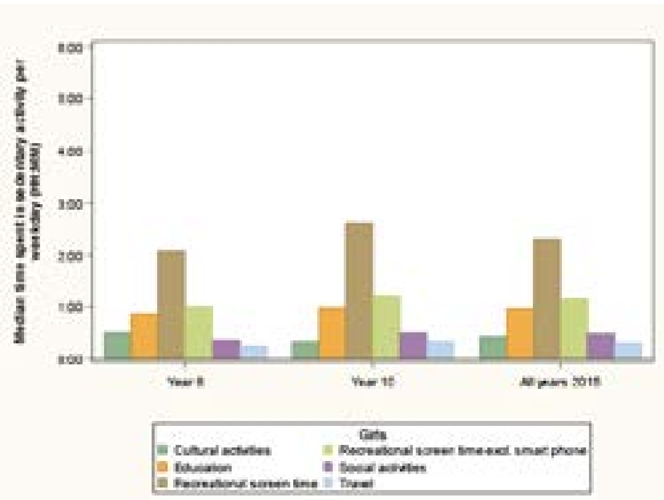
Table 11.20 and Figure 11.20 show the median daily time that adolescents spent in each domain of sedentary behaviour on a usual weekday, outside of school hours, by sex and year group in 2015, and in 2010 for comparison. Screen time has been reported with and without smartphone and/or tablet use. Overall, adolescents spent 20 minutes sitting in cultural activities, 51 minutes in educational activities, 2 hours and 36 minutes on screen time (including smartphone and tablet use), 1 hour and 30 minutes on screen time, excluding smartphone and tablet use, 19 minutes on social activities, and 17 minutes on passive travel on a weekday in 2015. Girls spent more time in cultural, educational, social and passive travel than boys; and boys had higher screen time than girls. Daily sitting time increases with age among adolescents for all domains except cultural activities.

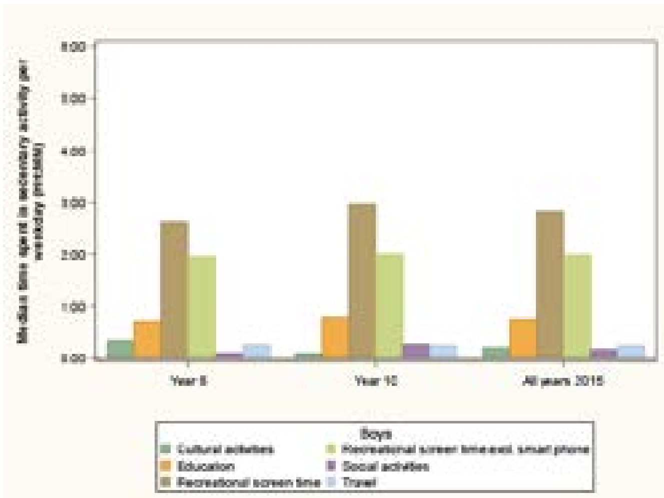
Table 11.20 Median time spent in each domain of sedentary behaviour on a weekday (outside of school hours) among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (hours: minutes, IQR)

Weekday	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Cultural	0:25	(0:59)	0:14	(0:57)	0:20	(0:59)	0:26	(0:59)
Education	0:47	(1:12)	0:55	(1:14)	0:51	(1:14)	0:48	(1:07)
Screen time [a]	2:22	(3:14)	2:47	(2:55)	2:36	(3:07)	na	
Screen time [b]	1:24	(2:08)	1:39	(2:03)	1:30	(2:06)	2:23	(2:32)
Social	0:14	(0:48)	0:23	(0:58)	0:19	(0:57)	0:17	(0:51)
Travel	0:15	(0:40)	0:19	(0:45)	0:17	(0:42)	0:27	(0:45)
GIRLS								
Cultural	0:30	(0:54)	0:20	(0:58)	0:25	(0:59)	0:26	(0:58)
Education	0:52	(1:16)	0:59	(1:20)	0:58	(1:18)	0:48	(1:05)
Screen time [a]	2:05	(3:08)	2:37	(2:50)	2:19	(3:03)	na	
Screen time [b]	1:00	(1:42)	1:13	(1:33)	1:09	(1:39)	2:00	(2:05)
Social	0:21	(0:58)	0:30	(1:02)	0:29	(0:59)	0:22	(0:54)
Travel	0:15	(0:39)	0:20	(0:44)	0:18	(0:40)	0:29	(0:50)
BOYS								
Cultural	0:20	(0:56)	0:05	(0:55)	0:12	(0:55)	0:26	(1:00)
Education	0:43	(1:07)	0:47	(1:18)	0:45	(1:16)	0:47	(1:05)
Screen time [a]	2:37	(3:12)	2:59	(3:00)	2:49	(3:09)	na	
Screen time [b]	1:57	(2:25)	2:00	(2:17)	2:00	(2:24)	2:46	(2:48)
Social	0:06	(0:33)	0:16	(0:56)	0:10	(0:45)	0:10	(0:42)
Travel	0:16	(0:41)	0:15	(0:44)	0:15	(0:42)	0:25	(0:43)

Note: No significance testing was conducted.
a = includes smartphone, tablet.
b = excludes smartphone, tablet.
na = not available.

Figure 11.20 Median time spent in each domain of sedentary behaviour on a weekday (outside of school hours) among adolescents in secondary school by sex and year group in 2015 (hours: minutes)





WEEKEND DAY

The following section reports on the median total sitting time of adolescents on a weekend day. Note that playing on a smartphone or iPad/tablet was added to the 2015 questionnaire and is included in the total time for 2015. This may account for any increase in sitting time between 2010 and 2015.

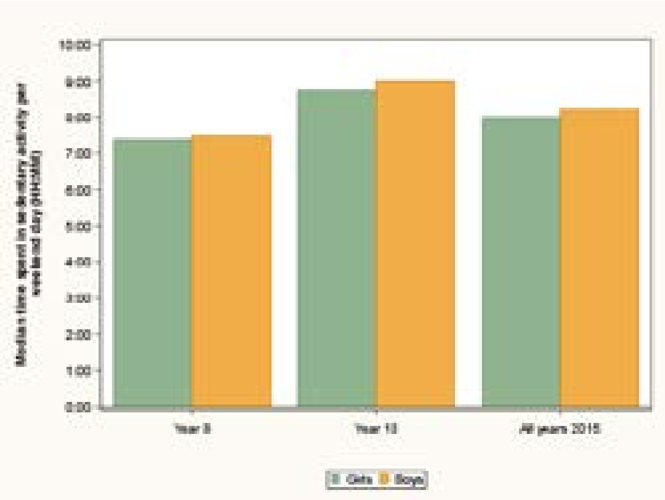
Table 11.21 and Figure 11.21 show the median daily time, in hours and minutes, that adolescents spent in total sitting time on a usual weekend day by sex and year group in 2015, and in 2010 for comparison. Overall, adolescents spent 8 hours and 8 minutes in total sitting time on a weekend day in 2015. Total sitting time appeared to be slightly higher among boys, compared with girls within year groups; and older adolescents appeared to increase total daily sitting time by 80-90 minutes. Between 2010 and 2015, overall total daily sitting time among adolescents increased 8 minutes, and 19 minutes among girls, while boys' total sitting time decreased 14 minutes.

Table 11.21 Median total daily sitting time on a weekend day among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (hours:minutes, IQR)

	2015			2010
	Year 8	Year 10	All years	All years
WEEKEND DAY				
All	7:29 (6:59)	8:59 (6:57)	8:08 (7:13)	8:00 (5:44)
Girls	7:23 (7:09)	8:44 (6:39)	8:00 (7:04)	7:41 (5:38)
Boys	7:29 (6:44)	9:00 (7:11)	8:13 (7:18)	8:27 (5:39)

Note: No significance testing was conducted.

Figure 11.21 Median total sitting time on a weekend day among adolescents in secondary school by sex and year group in 2015 (hours:minutes)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that adolescents spent 8 hours and 8 minutes (median) in total sitting time on a weekend day. Table 11.22 and Figure 11.22 show the median total sitting time among adolescents on a weekend day by socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison. Differences between socio-demographic characteristics were not statistically tested.

Locality

2015: Overall, total daily sitting time was 54 minutes higher among adolescents from urban areas, compared with adolescents from rural areas.

Change between 2010-2015: Overall, total daily sitting time has increased 7 minutes among adolescents from urban areas and 10 minutes among adolescents from rural areas between 2010 and 2015.

Socio-economic status

2015: Overall, total daily sitting time was higher among adolescents from middle SES background (8:29 hours), than children from high SES (8:00 hours) and low SES (7:56 hours) backgrounds.

Change between 2010-2015: Overall, total daily sitting time increased among adolescents from low SES (15 minutes) and middle SES (18 minutes) backgrounds, and decreased 8 minutes among adolescents from high SES backgrounds between 2010 and 2015.

Cultural background

2015: Overall, total daily sitting time was higher among adolescents from European (9:41 hours) and Asian (9:54 hours) cultural backgrounds and lower among adolescents from Middle Eastern (6:57 hours) cultural backgrounds, compared with adolescents from English-speaking backgrounds (7:59 hours).

Change between 2010-2015: Overall, total daily sitting time increased among adolescents from English-speaking backgrounds (1 minute) and Asian (32 minutes) cultural backgrounds and decreased among adolescents from Middle Eastern (81 minutes) and European (24 minutes) cultural backgrounds, between 2010 and 2015.

Weight status

2015: Overall, total daily sitting time was higher among adolescents in the thin (7 minutes) and obese (18 minutes) BMI categories, and 12 minutes lower among adolescents in the overweight BMI category, compared with adolescents in the healthy weight BMI category.

Change between 2010-2015: Overall, total daily sitting time decreased among adolescents in the thin (2 minutes) and obese (51minutes) BMI categories, and increased among adolescents in the healthy weight (10 minutes) and overweight (12 minutes) BMI categories.

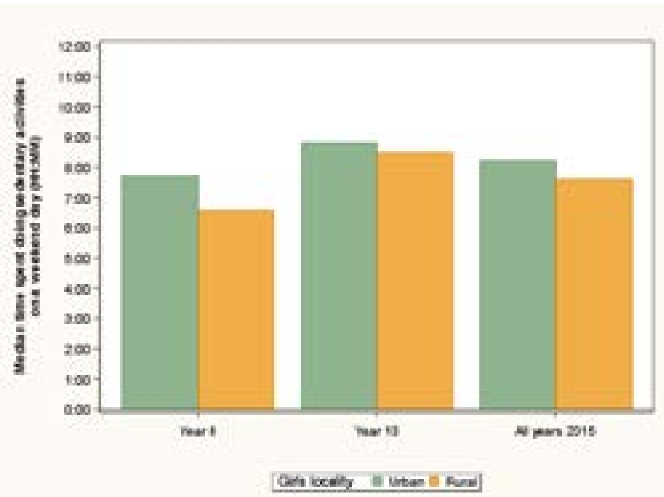
Table 11.22 Median total daily sitting time on a weekend day among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (hours: minutes, IQR)

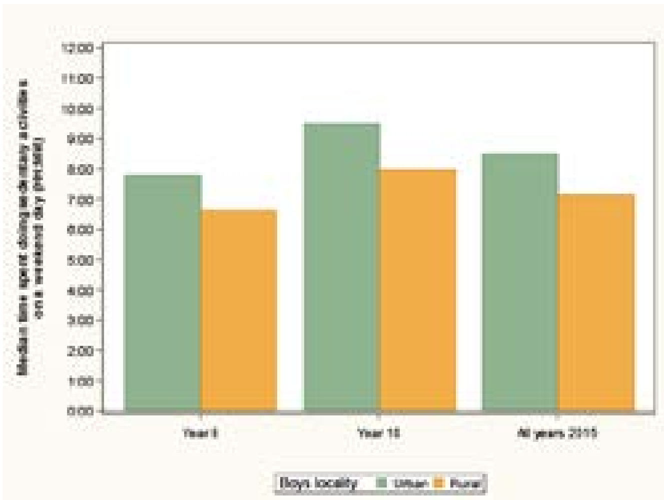
	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	7:45	(7:13)	9:08	(6:52)	8:23	(7:01)	8:16	(5:41)
Rural	6:35	(6:26)	8:23	(7:27)	7:29	(7:11)	7:19	(5:47)
SES								
Low	7:29	(8:32)	8:35	(7:55)	7:56	(8:17)	7:41	(5:46)
Middle	7:58	(6:59)	9:13	(7:33)	8:29	(7:10)	8:11	(5:57)
High (ref)	7:00	(5:48)	8:59	(6:06)	8:00	(6:10)	8:08	(5:16)
Cultural background								
English-speaking (ref)	7:24	(6:55)	8:44	(6:51)	7:59	(7:00)	7:58	(5:31)
European	8:23	(4:24)	11:22	(6:24)	9:41	(5:59)	10:05	(5:51)
Middle Eastern	6:06	(8:11)	8:39	(6:57)	6:57	(7:45)	8:18	(6:01)
Asian	8:02	(6:30)	10:44	(6:28)	9:54	(6:55)	9:22	(5:49)
BMI category								
Thin	7:01	(7:22)	9:00	(4:50)	8:16	(6:42)	8:18	(5:49)
Healthy weight (ref)	7:16	(6:15)	9:00	(6:47)	8:09	(6:40)	7:59	(5:31)
Overweight	7:55	(7:53)	7:59	(7:44)	7:57	(7:50)	7:45	(6:14)
Obese	8:56	(9:00)	7:45	(9:11)	8:27	(8:59)	9:18	(5:38)
GIRLS								
Locality								
Urban (ref)	7:44	(7:23)	8:49	(6:53)	8:13	(7:04)	7:51	(5:37)
Rural	6:34	(6:13)	8:28	(5:35)	7:37	(6:19)	7:13	(5:18)
SES								
Low	7:15	(8:43)	8:46	(5:53)	8:00	(7:45)	7:26	(5:38)
Middle	8:09	(7:23)	8:56	(7:48)	8:37	(7:29)	7:56	(5:42)
High (ref)	6:58	(5:45)	8:30	(6:31)	7:42	(5:55)	7:42	(5:41)
Cultural background								
English-speaking (ref)	7:16	(6:56)	8:31	(6:38)	7:58	(7:05)	7:37	(5:41)
European	7:31	(3:14)	10:34	(8:27)	7:51	(5:01)	7:14	(4:27)
Middle Eastern	5:37	(5:21)	7:51	(7:10)	5:44	(7:50)	7:59	(5:38)
Asian	7:45	(7:09)	10:27	(6:55)	9:44	(7:08)	9:06	(5:33)
BMI category								
Thin	6:49	(9:34)	8:44	(4:47)	8:20	(8:27)	8:11	(5:48)
Healthy weight (ref)	7:10	(5:56)	8:56	(6:18)	8:04	(6:33)	7:38	(5:35)
Overweight	7:36	(8:20)	8:02	(7:07)	7:55	(7:40)	7:37	(5:34)
Obese	10:47	(8:19)	4:47	(7:38)	8:28	(9:48)	7:50	(6:12)

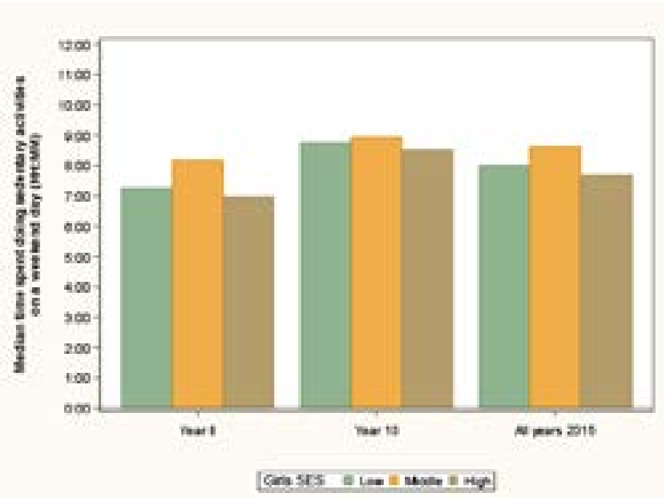
	2015						2010	
	Year 8		Year 10		All years		All years	
BOYS								
Locality								
Urban (ref)	7:48	(6:55)	9:28	(6:36)	8:28	(7:06)	8:41	(5:32)
Rural	6:37	(6:10)	7:58	(8:44)	7:08	(7:51)	7:24	(5:58)
SES								
Low	7:29	(8:10)	7:59	(8:49)	7:46	(8:45)	7:58	(6:14)
Middle	7:55	(6:45)	9:28	(7:05)	8:28	(7:16)	8:32	(5:45)
High (ref)	7:05	(5:49)	9:29	(5:35)	8:17	(6:06)	8:39	(5:02)
Cultural background								
English-speaking (ref)	7:28	(6:46)	8:54	(7:15)	8:00	(7:09)	8:15	(5:29)
European	12:15	(6:10)	9:45	(6:00)	11:10	(6:25)	12:13	(4:49)
Middle Eastern	7:11	(9:22)	8:34	(6:51)	7:40	(7:57)	9:31	(6:57)
Asian	8:06	(7:00)	10:56	(5:57)	10:07	(6:54)	9:48	(5:39)
BMI category								
Thin	7:03	(5:33)	9:02	(4:45)	8:14	(5:28)	9:08	(5:10)
Healthy weight (ref)	7:27	(6:41)	9:11	(7:01)	8:14	(7:11)	8:28	(5:24)
Overweight	7:55	(7:17)	7:58	(8:25)	7:58	(7:51)	7:56	(6:43)
Obese	5:50	(8:02)	9:29	(9:02)	8:24	(8:45)	9:36	(5:13)

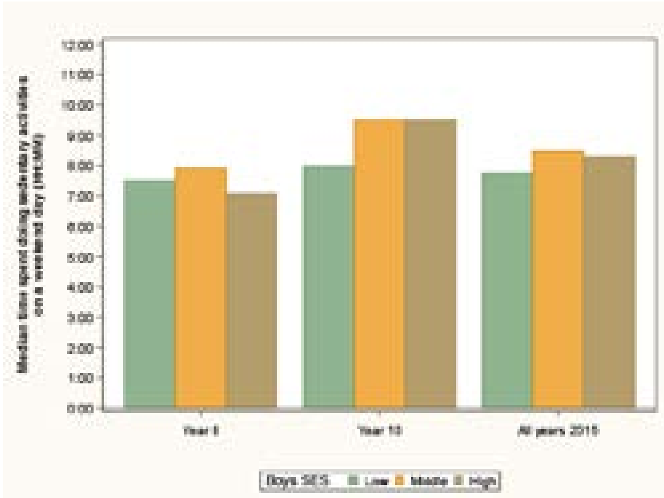
Note: No significance testing was conducted.

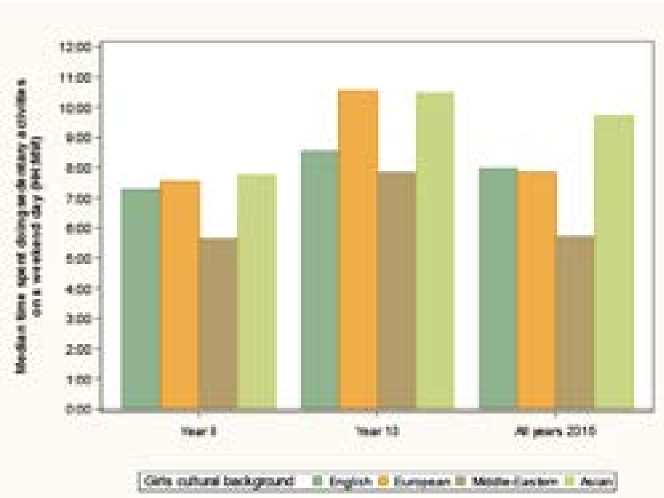
Figure 11.22 Median total daily sitting time on a weekend day among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (hours:minutes)

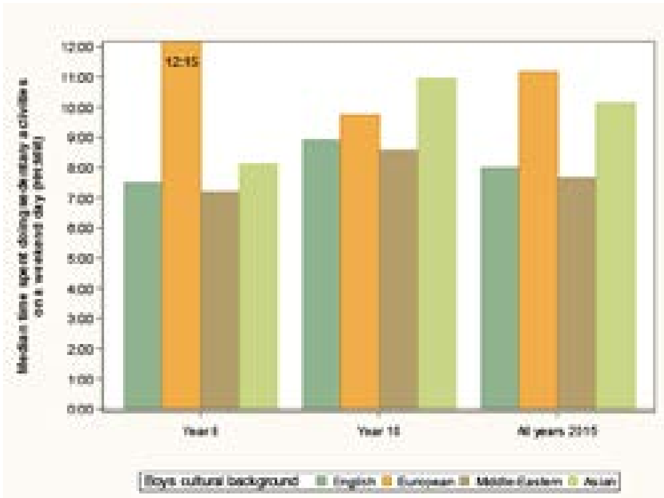


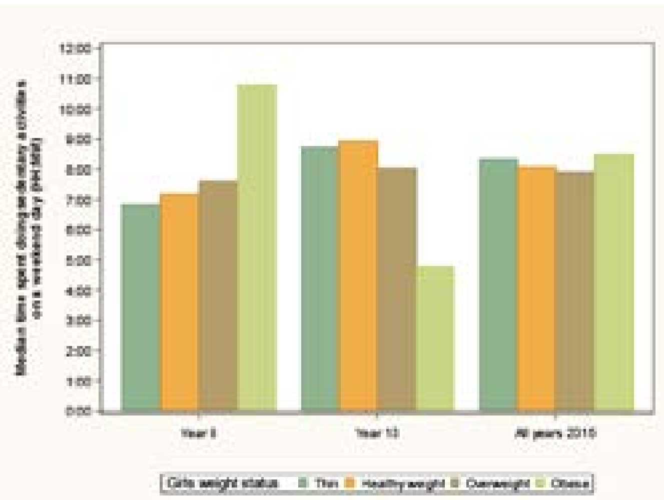


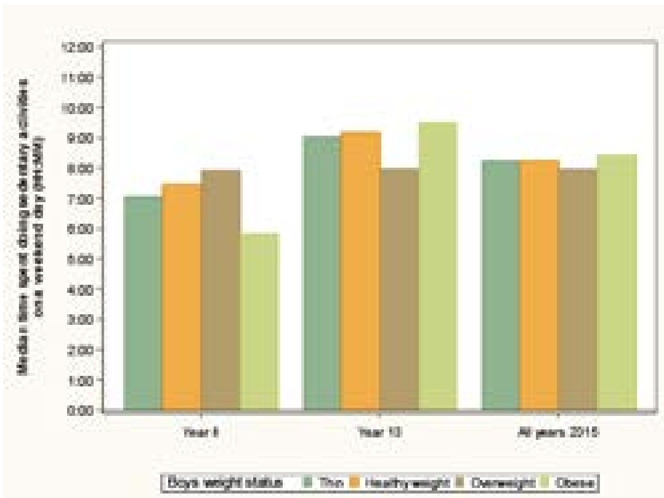

Median time spent doing sedentary activities on a weekend day (HH:MM)
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Median time spent doing sedentary activities on a weekend day (HH:MM)
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Median time spent doing sedentary activities on a weekend day (HH:MM)
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Median time spent doing sedentary activities on a weekend day (HH:MM)
12:15
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Median time spent doing sedentary activities on a weekend day (HH:MM)
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Median time spent doing sedentary activities on a weekend day (HH:MM)
0:00
1:00
2:00
3:00
4:00
5:00
6:00
7:00
8:00
9:00
10:00
11:00
12:00
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

DOMAINS OF SEDENTARY BEHAVIOUR

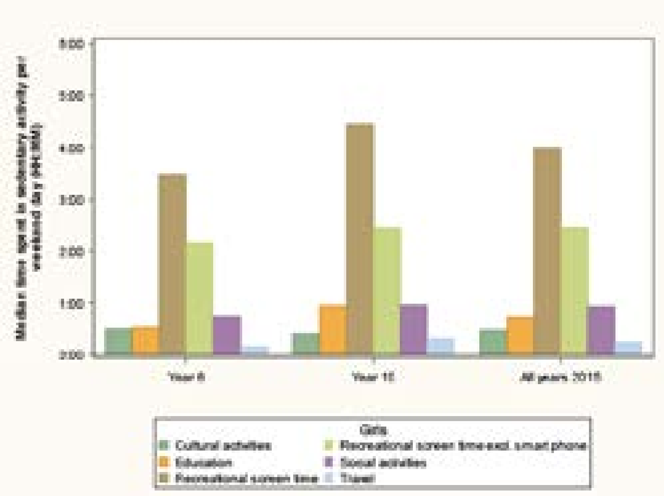
Table 11.23 and Figure 11.23 show the median time, in hours per day, that adolescents in secondary school spent in each domain of sedentary behaviour; that is, time spent sitting in educational, travel, cultural, social and screen time activities, on a weekend day, by sex and year group. Overall, adolescents spent 15 minutes sitting in cultural activities, 30 minutes in educational activities, 4 hours and 29 minutes on screen time (including smartphone and tablet use), 2 hours and 58 minutes on screen time, excluding smartphone and tablet use, 40 minutes on social activities and 10 minutes on passive travel on a weekend day in 2015. All domains of sitting showed an increase with age, except cultural activities, and girls spent more time in cultural, educational, social and passive travel than boys; while boys had higher screen time than girls.

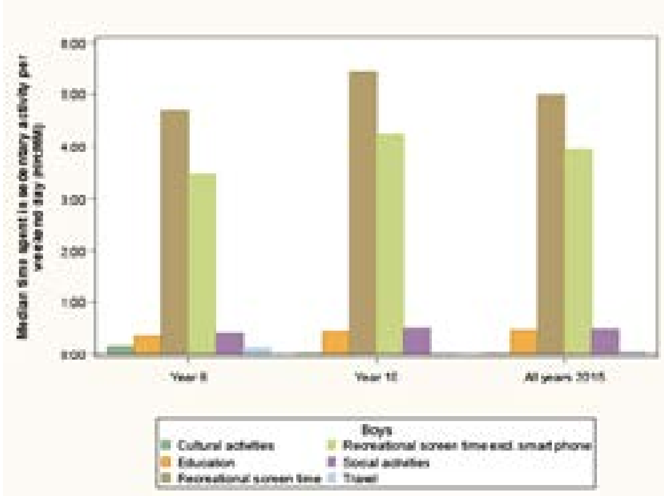
Table 11.23 Median time spent in each domain of sedentary behaviour on a weekend day among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (hours: minutes, IQR)

Weekend day	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Cultural	0:20 (1:13)	0:10 (0:59)	0:15 (1:09)	0:29 (1:29)
Education	0:29 (1:13)	0:41 (1:29)	0:30 (1:28)	0:30 (1:27)
Screen time [a]	3:59 (4:59)	4:57 (5:11)	4:29 (5:00)	na
Screen time [b]	2:55 (3:44)	3:14 (4:02)	2:58 (3:51)	4:14 (3:59)
Social	0:30 (1:29)	0:55 (1:56)	0:40 (1:56)	0:45 (1:55)
Travel	0:09 (0:39)	0:13 (0:43)	0:10 (0:40)	0:15 (0:40)
GIRLS				
Cultural	0:29 (1:29)	0:24 (1:13)	0:28 (1:27)	0:30 (1:29)
Education	0:31 (1:25)	0:56 (1:52)	0:44 (1:29)	0:43 (1:25)
Screen time [a]	3:29 (4:24)	4:26 (4:59)	3:59 (4:45)	na
Screen time [b]	2:09 (3:00)	2:27 (3:19)	2:28 (3:12)	3:30 (3:18)
Social	0:45 (1:52)	0:57 (2:14)	0:56 (1:56)	0:57 (1:44)
Travel	0:09 (0:40)	0:18 (0:45)	0:14 (0:44)	0:17 (0:43)
BOYS				
Cultural	0:09 (0:59)	0:00 (0:59)	0:00 (0:59)	0:28 (1:36)
Education	0:21 (0:59)	0:26 (1:25)	0:28 (1:11)	0:28 (1:14)
Screen time [a]	4:42 (5:03)	5:26 (5:00)	4:59 (5:12)	na
Screen time [b]	3:28 (4:10)	4:14 (4:34)	3:56 (4:24)	4:57 (4:24)
Social	0:24 (0:59)	0:30 (1:52)	0:28 (1:28)	0:29 (1:29)
Travel	0:08 (0:38)	0:00 (0:30)	0:03 (0:34)	0:14 (0:39)

Note: No significance testing was conducted.
[a] = includes smartphone, tablet.
[b] = excludes smartphone, tablet.
na = not available.

Figure 11.23 Median time spent in each domain of sedentary behaviour on a usual weekend day among adolescents in secondary school, by sex and year group in 2015 (hours:minutes)





SCREEN TIME

Screen-time refers to leisure time spent watching television, DVDs, videos, using computers (for fun), playing computer or video games (e.g., Wii, PlayStation, Xbox, Nintendo) and, more recently, playing on smartphones or tablet devices. Recommendations on Australian children's use of electronic media, or screen time were first published in 2004 by the Department of Health and Ageing[18] and revised in 2014.[19] The current guidelines recommend that adolescents (i.e., age 13-17 years) limit use of electronic media for entertainment to no more than two hours a day – and lower levels are associated with reduced health risks. This section presents the prevalence of adolescents who meet this recommendation, on weekdays and on weekend days.

The 2015 screen time prevalence estimates include playing on a smartphone or tablet device. Playing on a smart phone or tablet device *was not* measured in 2010; hence caution is required when examining prevalence difference between 2010 and 2015.

WEEKDAY

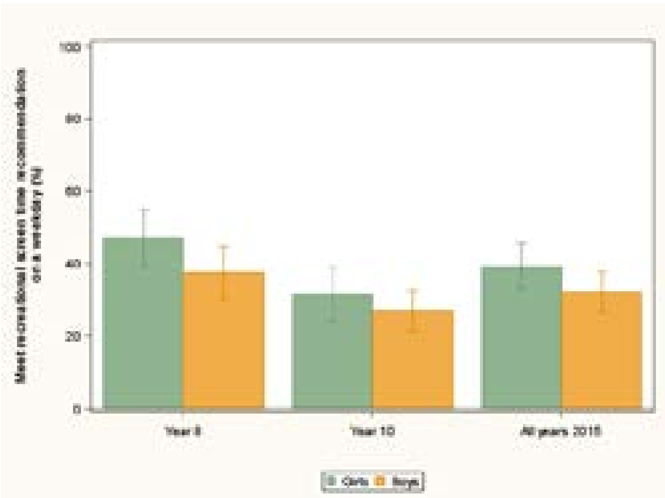
Table 11.24 and Figure 11.24 show the prevalence of meeting recommended daily limits on screen time on a weekday (outside of school hours), among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 36% of adolescents met the recommended daily limits on screen time and there was no significant difference between girls and boys. There was no significant change in the proportion of adolescents meeting the recommended daily limits on screen time between 2010 and 2015.

Table 11.24 Prevalence of meeting recommended daily limits on screen time (ST) on a weekday among adolescents in secondary school by sex, year group in 2015, and in 2010 for comparison (%, SE)

	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Met ST recommendation	42.2	(2.9)	29.2	(2.3)	35.7	(2.2)	39.7	(1.8)
Did not meet ST recommendation	57.8	(2.9)	70.8	(2.3)	64.3	(2.2)	60.3	(1.8)
GIRLS								
Met ST recommendation	**47.1**	**(3.9) a**	31.6	(3.6)	39.2	(3.1)	46.4	(2.0)
Did not meet ST recommendation	52.9	(3.9)	68.4	(3.6)	60.8	(3.1)	53.6	(2.0)
BOYS								
Met ST recommendation	37.4	(3.6)	26.9	(2.8)	32.1	(2.7)	33.3	(2.4)
Did not meet ST recommendation	62.6	(3.6)	73.1	(2.8)	67.9	(2.7)	66.7	(2.4)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 11.24 Prevalence of meeting the recommended daily limits on screen time on weekdays among adolescents in secondary school by sex, year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately one-third (36%) of adolescents met the recommended daily limits on screen time on weekdays. Table 11.25 and Figure 11.25 show the prevalence of meeting the recommended daily limits on screen time on weekdays among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, there were no significant differences in the prevalence of meeting the recommended daily limits on screen time between adolescents from urban and from rural areas.

Change between 2010-2015: There were no significant changes in the prevalence of meeting the recommended daily limits on screen time among adolescents from urban or from rural areas between 2010 and 2015.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of meeting the recommended daily limits on screen time between adolescents from different SES backgrounds.

Change between 2010-2015: There were no significant changes in the prevalence of meeting the recommended daily limits on screen time among adolescents from different SES backgrounds, between 2010 and 2015.

Cultural background

2015: Overall, there were no significant differences in the prevalence of meeting the recommended daily limits on screen time between adolescents from different cultural backgrounds.

Change between 2010-2015: Overall, there were no significant changes in the prevalence of meeting the recommended daily limits on screen time among adolescents from different cultural backgrounds between 2010 and 2015.

Weight status

2015: Overall, there were no significant differences in the prevalence of meeting the recommended daily limits on screen time between adolescents from different BMI categories.

Change between 2010-2015: There were no significant changes in the prevalence of meeting the recommended daily limits on screen time among adolescents in different BMI categories between 2010 and 2015.

Table 11.25 Prevalence of meeting the recommended daily limits on screen time on a weekday among adolescents in secondary school by sex, year group, socio-demographic characteristics, and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	40.0	(3.3)	28.2	(2.4)	34.1	(2.4)	38.3	(2.0)
Rural	48.1	(6.4)	32.0	(6.1)	40.0	(5.5)	44.3	(3.8)
SES								
Low	**37.1**	**(4.2) a**	28.2	(2.7)	32.5	(2.8)	36.9	(3.7)
Middle	**36.8**	**(4.7) a**	29.8	(4.0)	33.3	(3.4)	34.7	(2.1)
High (ref)	52.3	(4.8)	29.8	(4.8)	41.3	(4.3)	47.2	(2.6)
Cultural background								
English-speaking (ref)	42.6	(3.1)	29.3	(2.6)	36.0	(2.5)	40.1	(1.7)
European	64.3	(15.0)	33.5	(11.0)	48.3	(10.4)	43.3	(9.3)
Middle Eastern	39.7	(9.6)	43.1	(13.0)	41.3	(8.4)	39.3	(7.8)
Asian	40.5	(6.5)	22.7	(4.9)	29.9	(3.7)	32.0	(4.5)
BMI category								
Thin	43.3	(6.1)	37.9	(7.3)	40.8	(5.3)	36.7	(5.0)
Healthy weight (ref)	44.2	(3.3)	29.9	(2.7)	36.9	(2.5)	42.0	(2.0)
Overweight	38.3	(4.1)	27.0	(3.9)	32.7	(2.7)	34.9	(2.9)
Obese	32.6	(5.4)	22.1	(6.7)	27.5	(4.0)	28.7	(4.2)
GIRLS								
Locality								
Urban (ref)	45.6	(4.7)	30.2	(3.7)	37.8	(3.5)	45.4	(2.2)
Rural	51.2	(7.3)	35.8	(9.5)	43.5	(7.6)	50.0	(4.7)
SES								
Low	43.8	(5.5)	29.5	(4.9)	36.7	(4.0)	43.1	(3.9)
Middle	41.5	(5.8)	33.1	(5.8)	37.2	(4.5)	42.7	(2.9)
High (ref)	55.2	(6.8)	32.4	(6.4)	43.7	(6.1)	52.8	(2.6)
Cultural background								
English-speaking (ref)	47.4	(4.2)	32.5	(4.1)	40.0	(3.6)	47.0	(2.1)
European	80.6	(14.9)	11.1	(8.7)	55.7	(12.6)	64.0	(11.2)
Middle Eastern	41.9	(12.8)	42.5	(14.9)	42.1	(11.1)	46.5	(9.8)
Asian	45.5	(9.0)	23.1	(6.2)	31.9	(4.0)	30.4	(3.8)
BMI category								
Thin	44.4	(8.6)	41.4	(8.7)	43.1	(6.0)	41.7	(7.1)
Healthy weight (ref)	48.4	(4.4)	33.1	(4.3)	40.5	(3.7)	48.6	(2.5)
Overweight	45.7	(6.0)	27.2	(5.2)	36.3	(4.1)	44.4	(4.7)
Obese	41.0	(8.7)	20.3	(7.8)	31.3	(6.1)	31.3	(6.3)

	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	34.2 (4.2)	26.1 (3.5)	30.2 (3.2)	31.6 (2.7)
Rural	45.3 (6.7)	28.7 (5.4)	36.9 (5.2)	39.2 (4.5)
SES				
Low	**30.1 (4.0) a**	27.0 (3.5)	28.5 (2.8)	31.0 (4.3)
Middle	**32.7 (5.2) a**	26.7 (4.8)	29.8 (4.1)	27.8 (2.6)
High (ref)	49.4 (6.4)	26.8 (5.8)	38.7 (5.3)	41.6 (3.7)
Cultural background				
English-speaking (ref)	38.1 (3.9)	26.2 (3.0)	32.2 (3.0)	33.6 (2.3)
European	14.5 (14.5)	47.6 (14.2)	38.7 (13.4)	30.1 (10.3)
Middle Eastern	37.5 (9.5)	43.5 (16.8)	40.6 (9.4)	28.9 (9.0)
Asian	33.5 (8.0)	22.2 (6.8)	27.0 (6.0)	33.1 (6.5)
BMI category				
Thin	42.1 (9.4)	34.9 (10.7)	38.6 (8.3)	29.1 (5.5)
Healthy weight (ref)	40.1 (4.2)	26.6 (3.3)	33.3 (3.2)	35.7 (2.7)
Overweight	31.7 (4.4)	26.8 (5.8)	29.3 (3.4)	27.4 (2.8)
Obese	23.5 (7.4)	23.8 (9.9)	23.6 (5.8)	27.1 (6.2)

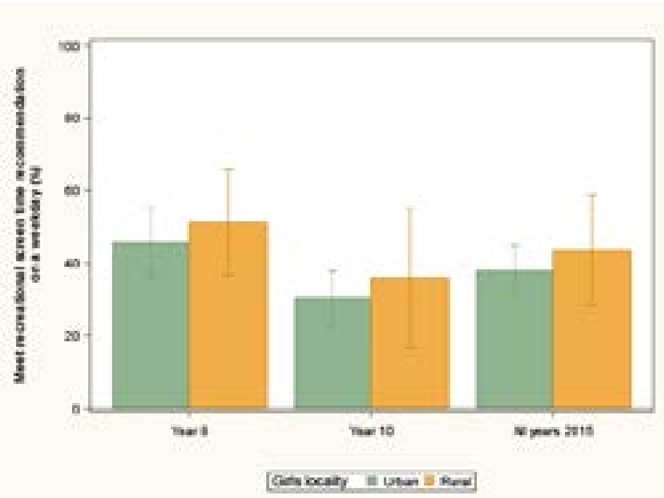
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

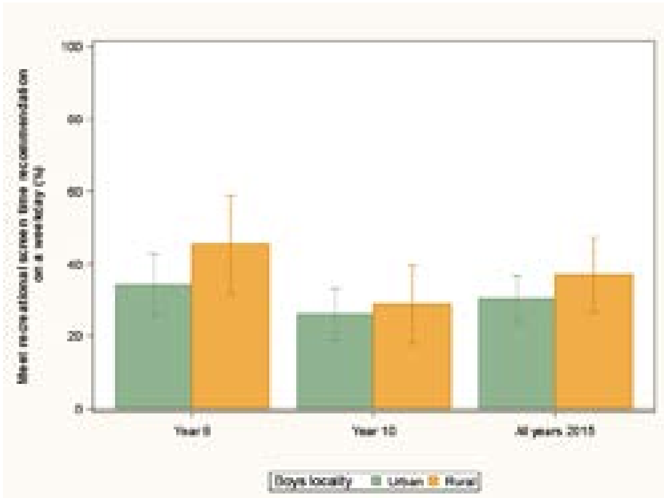
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

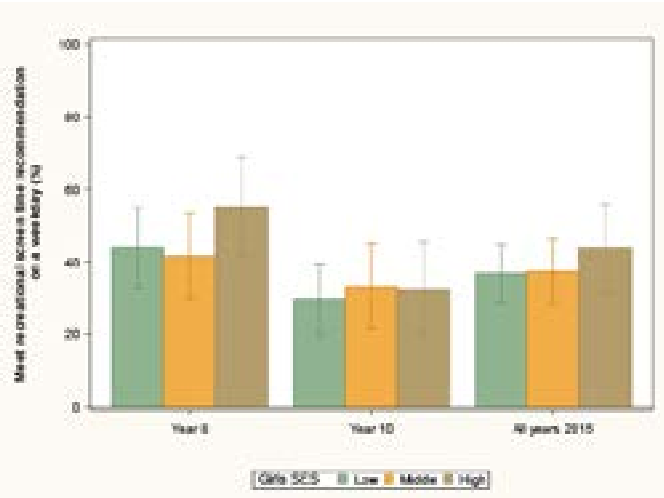
na *Indicates statistical significance could not be calculated due to low numbers.*

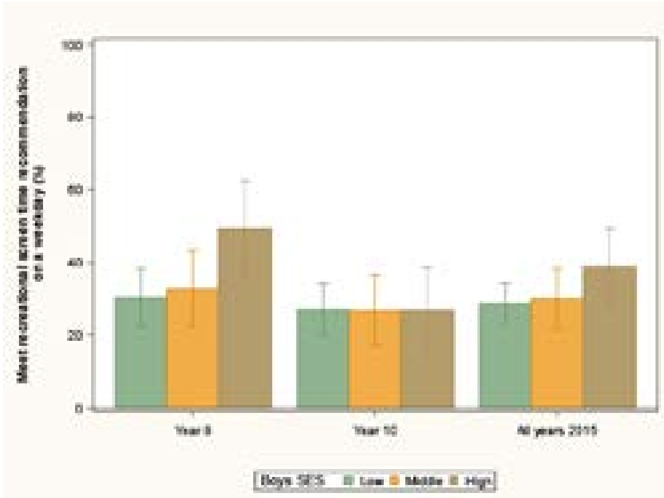
No letter means there was no statistical difference.

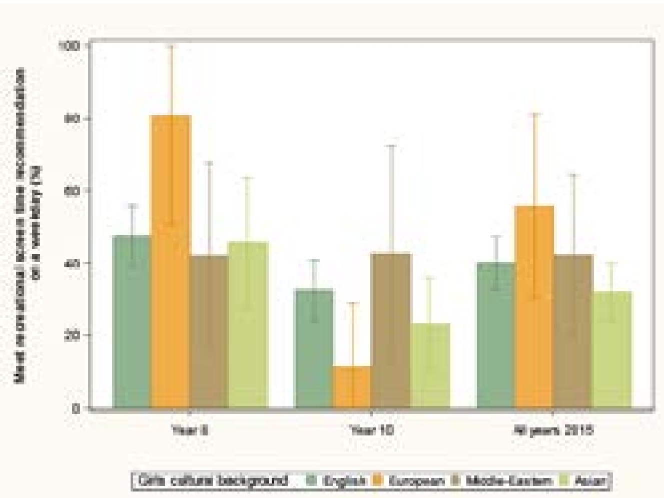
Figure 11.25 Prevalence of meeting the recommended daily limits on screen time on weekdays among adolescents in secondary school by sex, year group, socio-demographic characteristics, and BMI category in 2015 (%, 95%CI)

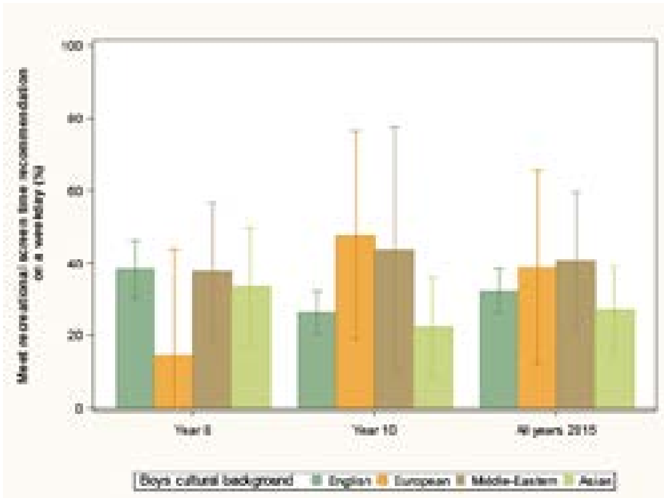


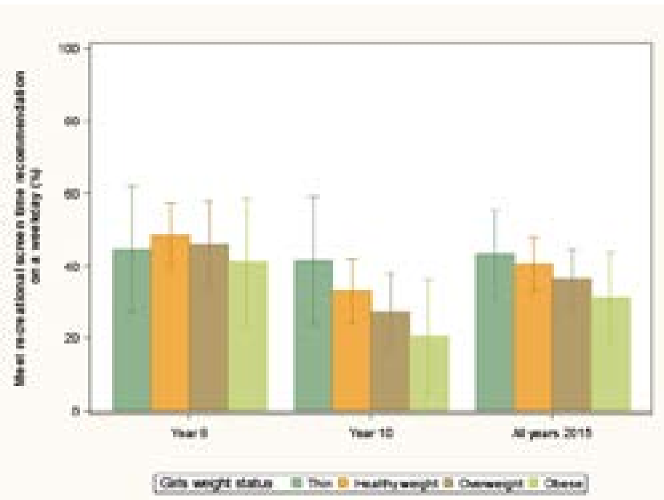


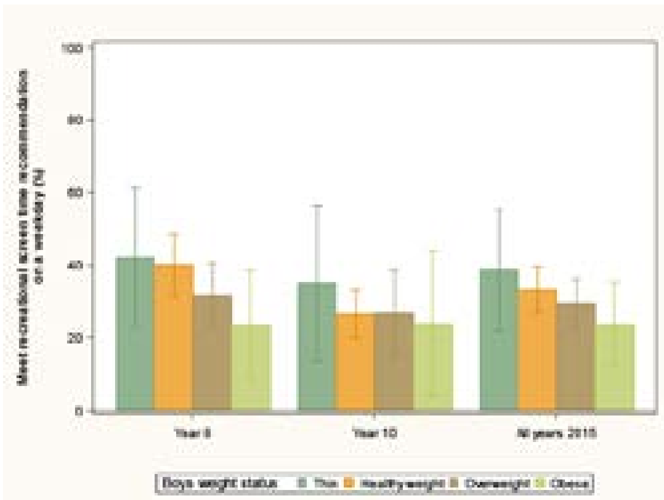

Meet recreational screen time recommendation on a weekday (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Meet recreational screen time recommendation on a weekday (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Meet recreational screen time recommendation on a weekday (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Meet recreational screen time recommendation on a weekday (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Meet recreational screen time recommendation on a weekday (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Meet recreational screen time recommendation on a weekday (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

WEEKEND DAY

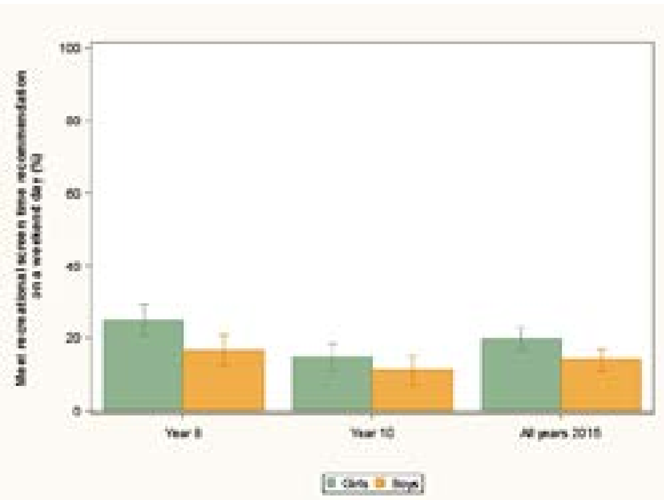
Table 11.26 and Figure 11.26 show the prevalence of meeting the recommended daily limits on screen time on weekend days among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 17% of adolescents met the recommended daily limits on screen time; and girls (20%) were significantly more likely to meet the recommended daily limits on screen time, compared with boys (14%). The proportion of adolescents meeting the recommended daily limits on screen time has not changed significantly between 2010 and 2015.

Table 11.26 Prevalence of meeting the screen time (ST) recommendation on weekend days among adolescents in secondary school by sex, year group in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Met ST recommendation	20.7 (1.7)	12.9 (1.3)	16.8 (1.2)	15.2 (1.0)
Did not meet ST recommendation	79.3 (1.7)	87.1 (1.3)	83.2 (1.2)	84.8 (1.0)
GIRLS				
Met ST recommendation	**24.9 (2.1) a**	14.6 (1.9)	**19.7 (1.5) a**	19.9 (1.4)
Did not meet ST recommendation	75.1 (2.1)	85.4 (1.9)	80.3 (1.5)	80.1 (1.4)
BOYS				
Met ST recommendation	16.6 (2.1)	11.1 (2.0)	13.9 (1.5)	10.9 (1.1)
Did not meet ST recommendation	83.4 (2.1)	88.9 (2.0)	86.1 (1.5)	89.1 (1.1)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 11.26 Prevalence of meeting the recommended daily limits on screen time on weekend days among adolescents in secondary school by sex, year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 17% of adolescents met the recommended daily limits on screen time on weekend days. Table 11.27 and Figure 11.27 show the prevalence of meeting recommended daily limits on screen time on weekend days among adolescents by sex, year group, socio-demographic characteristics, and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of meeting the recommended daily limits on screen time was significantly higher among adolescents from rural areas (22%), compared with adolescents from urban areas (15%); and among boys from rural areas (19%), compared with boys from urban areas (12%).

Change between 2010-2015: There were no significant changes in the prevalence of meeting the recommended daily limits on screen time among adolescents from urban or from rural areas between 2010 and 2015.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of meeting the recommended daily limits on screen time between adolescents from different SES backgrounds.

Change between 2010-2015: There were no significant changes in the prevalence of meeting the recommended daily limits on screen time among adolescents from different SES backgrounds, between 2010 and 2015.

Cultural background

2015: Overall, there were no significant differences in the prevalence of meeting the recommended daily limits on screen time between adolescents from different cultural backgrounds.

Change between 2010-2015: Overall, the prevalence of meeting the recommended daily limits on screen time significantly increased among adolescents from Middle Eastern cultural backgrounds, from 8% in 2010 to 21% in 2015; and among girls from Middle Eastern cultural backgrounds, from 11% in 2010 to 29% in 2015.

Weight status

2015: Overall, there were no significant differences in the prevalence of meeting the recommended daily limits on screen time between adolescents from different BMI categories.

Change between 2010-2015: The prevalence of meeting the recommended daily limits on screen time significantly increased among girls in the obese BMI category, from 10% in 2010 to 24% in 2015; and among boys in the healthy weight BMI category, from 11% in 2010 to 15% in 2015.

Table 11.27 Prevalence of meeting the recommended daily limits on screen time on a weekend day among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	18.6	(2.0)	11.4	(1.3)	15.0	(1.3)	13.5	(0.8)
Rural	**26.4**	**(2.9) a**	**16.9**	**(2.8) a**	**21.7**	**(2.3) a**	21.3	(2.5)
SES								
Low	21.5	(2.6)	16.4	(2.4)	18.9	(1.9)	19.2	(2.4)
Middle	17.2	(2.2)	10.9	(1.6)	14.1	(1.5)	12.2	(1.4)
High (ref)	23.1	(3.4)	10.8	(2.2)	17.1	(2.3)	15.2	(1.1)
Cultural background								
English-speaking (ref)	20.7	(1.8)	12.6	(1.3)	16.7	(1.3)	15.6	(1.0)
European	6.2	(6.2)	10.1	(7.0)	8.2	(3.9)	15.2	(6.0)
Middle Eastern	23.9	(4.9)	18.0	(8.2)	21.1	(4.9)	**8.4**	**(1.5) b**
Asian	22.4	(6.5)	14.9	(3.6)	18.0	(3.9)	12.1	(1.8)
BMI category								
Thin	24.1	(5.9)	11.7	(3.6)	18.5	(3.8)	14.3	(3.2)
Healthy weight (ref)	21.2	(2.1)	13.1	(1.4)	17.1	(1.4)	15.5	(1.1)
Overweight	19.8	(2.4)	10.0	(2.4)	15.1	(1.6)	16.4	(2.2)
Obese	13.4	(3.9)	21.9	(9.6)	17.6	(5.4)	9.6	(2.8)
GIRLS								
Locality								
Urban (ref)	22.6	(2.5)	13.7	(2.1)	18.1	(1.8)	18.0	(1.3)
Rural	31.7	(4.0)	17.3	(3.9)	24.5	(3.1)	26.4	(3.6)
SES								
Low	24.4	(3.1)	17.7	(3.6)	21.1	(2.6)	24.2	(3.2)
Middle	21.7	(3.6)	10.8	(2.4)	16.2	(2.4)	16.0	(2.2)
High (ref)	28.1	(4.8)	14.8	(3.3)	21.4	(3.1)	20.1	(1.5)
Cultural background								
English-speaking (ref)	25.5	(2.4)	14.3	(1.7)	19.9	(1.6)	20.5	(1.6)
European	8.3	(8.4)	11.1	(8.7)	9.3	(5.2)	24.4	(10.7)
Middle Eastern	34.1	(14.5)	23.1	(15.7)	29.4	(12.1)	**10.5**	**(2.4) b**
Asian	23.0	(7.0)	16.0	(5.0)	18.8	(4.4)	14.2	(3.9)
BMI category								
Thin	31.0	(7.3)	13.6	(5.7)	23.4	(4.3)	15.8	(3.8)
Healthy weight (ref)	24.9	(2.7)	14.4	(2.0)	19.5	(2.0)	20.7	(1.8)
Overweight	25.3	(4.4)	10.4	(3.5)	17.8	(2.5)	21.2	(3.4)
Obese	15.8	(5.8)	33.8	(13.4)	24.3	(7.7)	**10.4**	**(3.2) b**

	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	14.6 (2.4)	8.9 (1.6)	11.8 (1.2)	9.2 (1.0)
Rural	21.6 (3.4)	**16.6 (4.7) a**	**19.1 (3.5) a**	16.7 (2.0)
SES				
Low	18.4 (4.0)	**15.2 (3.8) a**	16.7 (2.9)	14.4 (2.5)
Middle	13.3 (2.3)	11.0 (2.4)	12.2 (1.8)	8.8 (1.5)
High (ref)	18.0 (3.6)	6.2 (1.5)	12.4 (2.0)	10.2 (1.5)
Cultural background				
English-speaking (ref)	16.3 (2.2)	10.9 (2.2)	13.7 (1.7)	11.0 (1.1)
European	na	9.4 (9.7)	6.9 (7.1)	9.3 (6.0)
Middle Eastern	13.9 (8.1)	14.4 (12.2)	14.2 (7.4)	5.2 (2.7)
Asian	21.7 (10.4)	13.1 (4.8)	16.8 (6.3)	10.8 (2.9)
BMI category				
Thin	17.4 (7.2)	10.1 (5.0)	13.9 (4.6)	12.1 (5.3)
Healthy weight (ref)	17.5 (2.6)	11.8 (2.4)	14.6 (1.9)	**10.6 (1.1) b**
Overweight	15.1 (2.8)	9.7 (3.4)	12.5 (2.1)	12.5 (2.8)
Obese	10.4 (4.9)	10.2 (7.9)	10.3 (4.8)	9.1 (4.0)

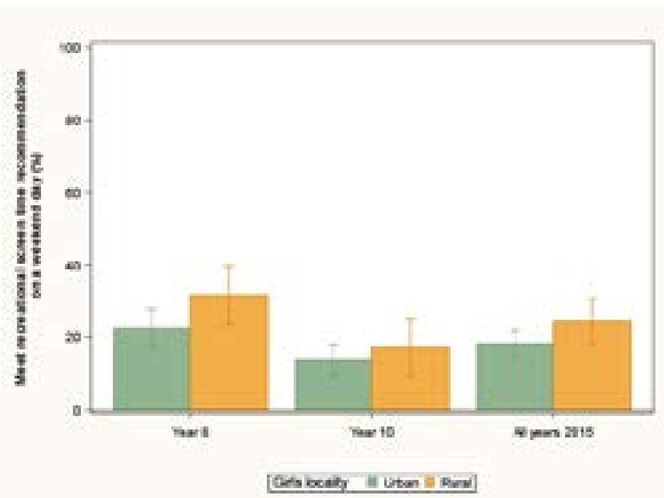
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

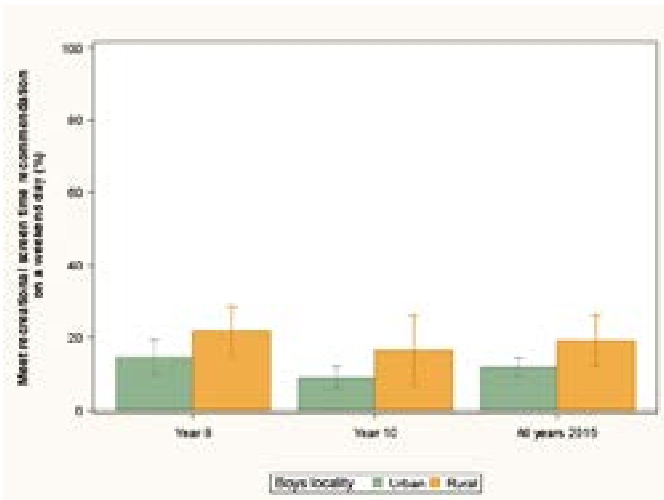
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

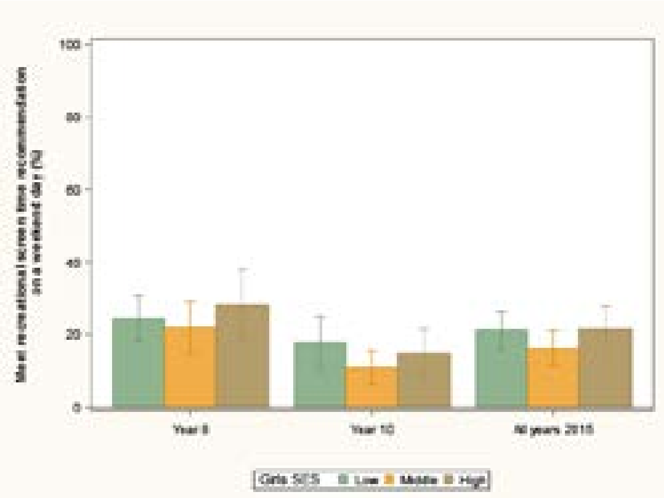
na *Indicates statistical significance could not be calculated due to low numbers.*

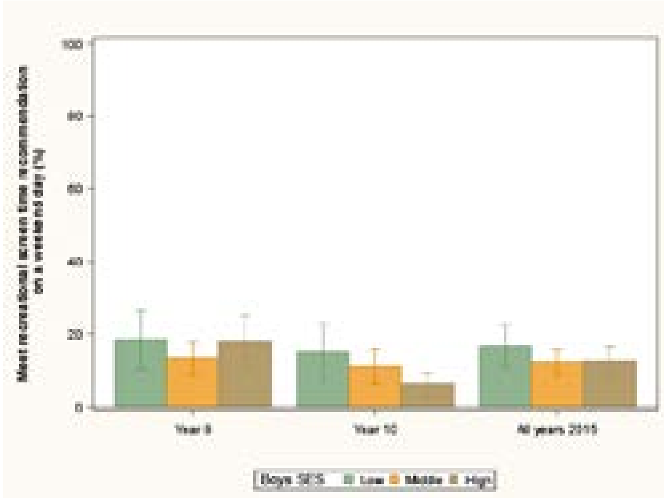
No letter means there was no statistical difference.

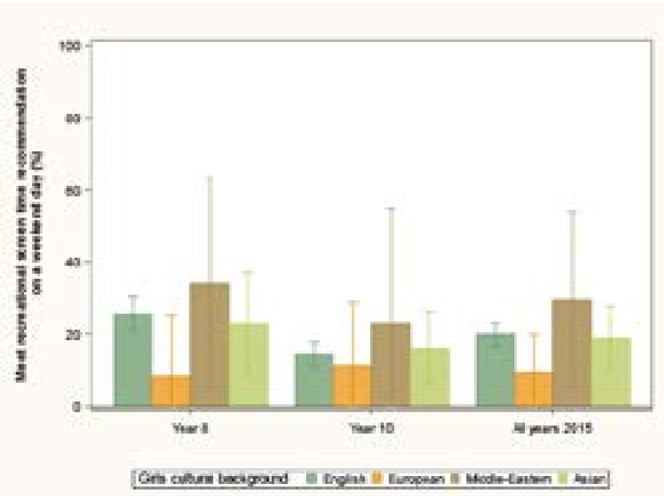
Figure 11.27 Prevalence of meeting the recommended daily limits on screen time on weekend days among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

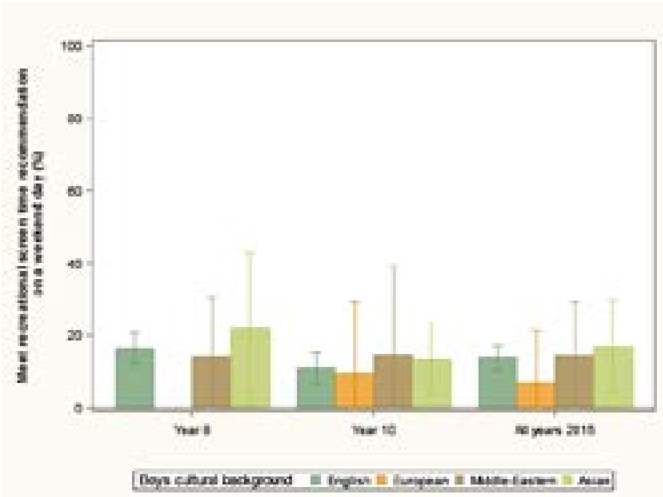


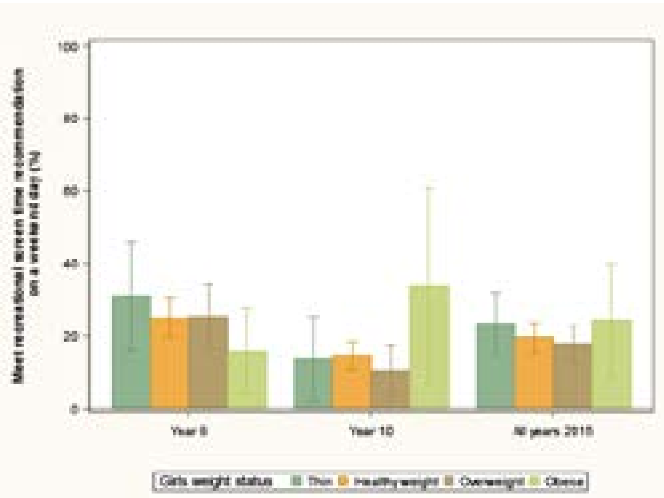


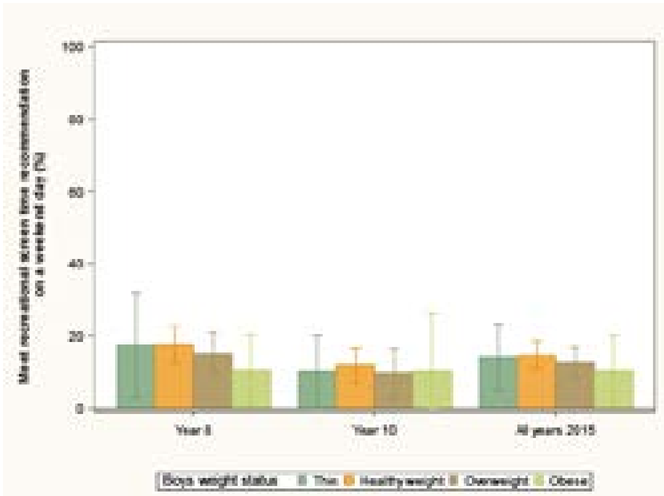

Meet recreational screen time recommendation on a weekend day (%)
Year 8
Year 10
All years 2015
Girls SES Low Middle High


Meet recreational screen time recommendation on a weekend day (%)
Year 8
Year 10
All years 2015
Boys SES Low Middle High


Meet recreational screen time recommendation on a weekend day (%)
Year 8
Year 10
All years 2015
Girls culture background English European Middle-Eastern Asian


Meet recreational screen time recommendation on a weekend day (%)
Year 8
Year 10
All years 2015
Boys cultural background English European Middle-Eastern Asian


Meet recreational screen time recommendation on a weekend day (%)
Year 8
Year 10
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Meet recreational screen time recommendation on a weekend day (%)
Year 8
Year 10
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

AWARENESS OF SCREEN TIME GUIDELINES FOR ADOLESCENTS

Recommendations for adolescents' screen time exposure were introduced in 2004.[30] Monitoring the level of adolescent awareness of the recommendation is a proxy indicator of the effectiveness of communication strategies about the recommendation. For SPANS, adolescents awareness of the recommended daily limits on screen time was assessed two ways; (i) using an opened-ended question asking respondents to report the recommendation, with only respondents reporting 2 hours a day classified as knowing the recommendation; and (ii) providing an 'I don't know' response option. The 'I don't know' response option decreases the likelihood of respondents being forced to guess the recommendation and can be used to inform dissemination strategies around the recommended daily limits on screen times.

Table 11.28 and Figure 11.28 show the prevalence of knowing the recommended daily limits on screen time for adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 11% of adolescents knew the recommended daily limits on screen time for adolescents. Overall, the proportion of adolescents who know the recommended daily limits on screen time significantly decreased, from 14% in 2010 to 11% in 2015. Similarly, the proportion of girls who know the recommended daily limits on screen time significantly decreased, from 14% in 2010 to 10% in 2015.

Table 11.28 Prevalence of knowing the recommended daily limits on screen time among adolescents in secondary school by year and sex in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Correctly reported < 2hrs	9.6 (1.2)	11.3 (1.1)	10.5 (0.8)	**14.2 (1.1) b**
Did not report < 2hrs	90.4 (1.2)	88.7 (1.1)	89.5 (0.8)	85.8 (1.1)
GIRLS				
Correctly reported < 2hrs	9.5 (1.4)	9.9 (1.5)	9.7 (1.0)	**13.6 (1.5) b**
Did not report < 2hrs	90.5 (1.4)	90.1 (1.5)	90.3 (1.0)	86.4 (1.5)
BOYS				
Correctly reported < 2hrs	9.8 (1.6)	12.8 (1.7)	11.3 (1.2)	14.7 (1.4)
Did not report < 2hrs	90.2 (1.6)	87.2 (1.7)	88.7 (1.2)	85.3 (1.4)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 11.28 Prevalence of knowing the recommended daily limits on screen time among adolescents in secondary school by year and sex in 2015 (%, 95%CI)

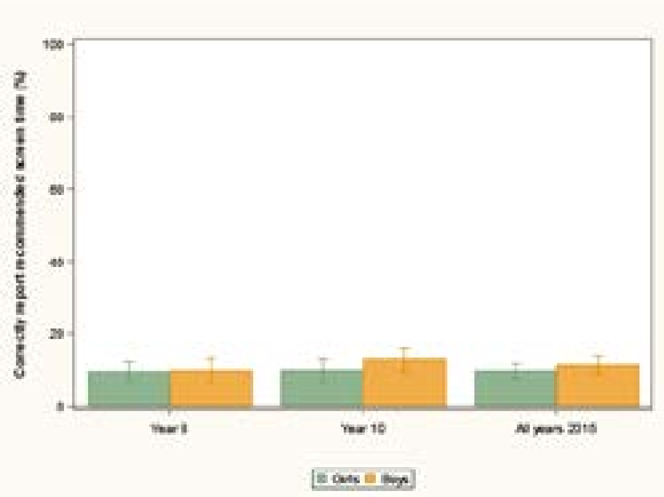


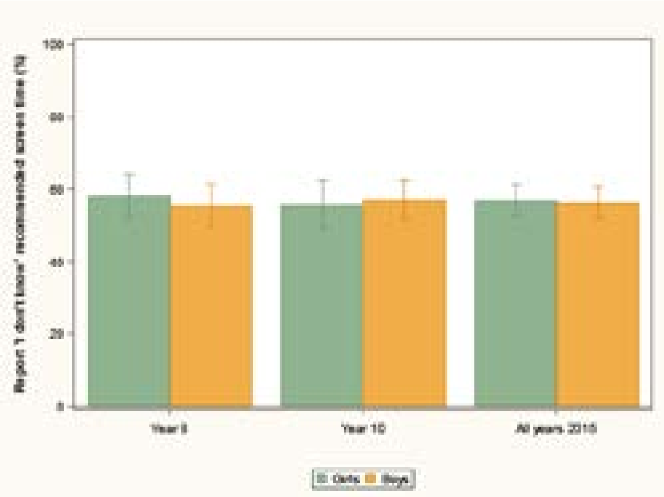
Table 11.29 and Figure 11.29 show the prevalence of not knowing the recommended daily limits on screen time among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 57% of adolescents do not know the recommended daily limits on screen time. The prevalence of not knowing the recommended daily limits on screen time has significantly increased among adolescents, from 48% in 2010 to 57% in 2015; among girls, from 50% in 2010 to 57% in 2015; and among boys, from 46% in 2010 to 56% in 2015.

Table 11.29 Prevalence of knowing the recommended daily limits on screen time among adolescents in secondary school by year and sex in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Did not know recommendation	56.7 (2.1)	56.3 (1.8)	56.5 (1.4)	**47.5 (1.4) b**
GIRLS				
Did not know recommendation	58.0 (3.1)	55.7 (3.3)	56.8 (2.2)	**49.7 (2.0) b**
BOYS				
Did not know recommendation	55.5 (2.9)	57.0 (2.6)	56.2 (2.2)	**45.5 (2.0) b**

a Indicates statistically significant difference at P < 0.05 between sex and within year group.
b Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.
na Indicates statistical significance could not be calculated due to low numbers.
No letter means there was no statistical difference.

Figure 11.29 Prevalence of not knowing the recommended daily limits on screen time among adolescents in secondary school by year and sex in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that more than half (57%) of adolescents did not know the recommended daily limits on screen time. Table 11.30 and Figure 11.30 show the prevalence of not knowing the recommended daily limits on screen time among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, there were no significant differences in the prevalence of not knowing the recommended daily limits on screen time between adolescents from urban and rural areas.

Change between 2010-2015: Overall, the prevalence of not knowing the recommended daily limits on screen time has significantly increased among adolescents from urban areas, from 46% in 2010 to 56% in 2015; among girls from urban areas, from 49% in 2010 to 56% in 2015; and among boys from urban areas, from 43% in 2010 to 56% in 2015.

Socio-economic status

2015: Overall, there was no significant difference in the prevalence of not knowing the recommended daily limits on screen time between adolescents from different SES backgrounds.

Change between 2010-2015: Overall, the prevalence of not knowing the recommended daily limits on screen time has significantly increased among adolescents from middle SES backgrounds, from 48% in 2010 to 61% in 2015; and from high SES backgrounds, from 45% in 2010 to 54% in 2015. The prevalence of not knowing the recommended daily limits on screen time has significantly increased among boys from middle SES backgrounds, from 45% in 2010 to 61% in 2015; and from high SES backgrounds, from 41% in 2010 to 54% in 2015.

Cultural background

2015: Overall, the prevalence of not knowing the recommended daily limits on screen time was significantly lower among adolescents from Middle Eastern cultural backgrounds (36%), compared with adolescents from English-speaking backgrounds (58%). The prevalence was significantly lower among girls from Middle Eastern cultural backgrounds (25%), compared with girls from English-speaking backgrounds (58%).

Change between 2010-2015: Overall, the prevalence of not knowing the recommended daily limits on screen time has significantly increased among adolescents from English-speaking backgrounds, from 48% in 2010 to 58% in 2015. The prevalence significantly increased among girls from English-speaking backgrounds, from 50% in 2010 to 58% in 2015; and among boys from English-speaking backgrounds, from 46% in 2010 to 57% in 2015.

Weight status

2015: Overall, there was no significant difference in the prevalence of not knowing the recommended daily limits on screen time between adolescents from different BMI categories.

Change between 2010-2015: Overall, the prevalence of not knowing the recommended daily limits on screen time has significantly increased among adolescents in the healthy weight BMI category, from 48% in 2010 to 57% in 2015; and the overweight BMI category, from 45% in 2010 to 57% in 2015. The prevalence significantly increased among girls in the healthy weight (from 50% in 2010 to 57% in 2015) and overweight (from 47% in 2010 to 58% in 2015) BMI categories; and among boys in the healthy weight (from 46% in 2010 to 56% in 2015) and overweight (from 44% in 2010 to 57% in 2015) BMI categories.

Table 11.30 Prevalence of not knowing the recommended daily limits on screen time among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	56.6	(2.2)	55.6	(2.4)	56.1	(1.6)	**46.0**	**(1.7) b**
Rural	57.2	(3.9)	58.4	(4.1)	57.8	(3.1)	52.9	(1.4)
SES								
Low	53.0	(3.7)	56.6	(3.3)	54.9	(2.2)	50.2	(2.7)
Middle	60.9	(2.8)	60.5	(2.9)	60.7	(2.2)	**47.9**	**(2.2) b**
High (ref)	56.7	(3.1)	52.0	(3.3)	54.4	(2.5)	**44.9**	**(1.6) b**
Cultural background								
English-speaking (ref)	57.7	(2.2)	57.6	(2.1)	57.7	(1.5)	**48.0**	**(1.5) b**
European	73.7	(11.3)	56.6	(13.3)	64.8	(8.1)	44.9	(6.9)
Middle Eastern	**31.6**	**(5.7) a**	40.1	(12.1)	**35.5**	**(6.7) a**	34.4	(4.6)
Asian	55.7	(4.9)	50.3	(3.7)	52.5	(2.8)	45.8	(2.9)
BMI category								
Thin	55.5	(5.8)	50.6	(6.8)	53.3	(4.6)	48.0	(4.0)
Healthy weight (ref)	57.2	(2.4)	56.2	(2.4)	56.7	(1.7)	**47.7**	**(1.5) b**
Overweight	55.9	(3.9)	58.8	(2.9)	57.3	(2.2)	**44.9**	**(2.5) b**
Obese	57.2	(5.9)	56.4	(7.6)	56.8	(5.1)	52.8	(4.7)
GIRLS								
Locality								
Urban (ref)	57.2	(3.7)	55.3	(4.0)	56.2	(2.6)	**49.1**	**(2.3) b**
Rural	60.5	(4.1)	56.7	(5.7)	58.6	(4.0)	51.7	(4.4)
SES								
Low	52.9	(4.9)	59.8	(4.5)	56.3	(3.0)	48.5	(4.1)
Middle	62.0	(4.8)	58.0	(4.8)	59.9	(3.8)	51.9	(2.7)
High (ref)	60.1	(3.9)	49.5	(6.0)	54.7	(3.8)	48.4	(2.6)
Cultural background								
English-speaking (ref)	59.7	(2.7)	57.0	(3.8)	58.4	(2.2)	**50.0**	**(2.2) b**
European	74.2	(10.4)	53.7	(25.6)	66.8	(9.5)	52.4	(13.0)
Middle Eastern	**22.8**	**(11.0) a**	28.8	(13.7)	**25.2**	**(8.9) a**	36.0	(4.7)
Asian	56.7	(6.3)	48.8	(3.9)	51.9	(3.3)	50.8	(5.3)
BMI category								
Thin	45.5	(7.8)	54.4	(11.1)	49.3	(6.4)	46.3	(5.4)
Healthy weight (ref)	59.4	(2.9)	54.8	(4.1)	57.1	(2.6)	**49.6**	**(2.0) b**
Overweight	57.8	(5.9)	57.6	(4.5)	57.7	(3.2)	**46.6**	**(4.3) b**
Obese	58.6	(8.2)	58.8	(11.0)	58.7	(6.2)	67.1	(6.8)

	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	56.0 (2.9)	55.8 (3.0)	55.9 (2.2)	**43.0 (2.2) b**
Rural	54.2 (5.9)	59.8 (6.2)	57.0 (5.0)	54.0 (3.3)
SES				
Low	53.2 (5.4)	53.8 (5.1)	53.5 (3.9)	51.8 (3.9)
Middle	60.1 (3.0)	62.9 (3.6)	61.4 (2.4)	**44.5 (2.8) b**
High (ref)	53.2 (4.7)	54.9 (4.8)	54.0 (4.1)	**41.4 (2.3) b**
Cultural background				
English-speaking (ref)	55.9 (3.1)	58.2 (2.8)	57.0 (2.4)	**46.1 (2.1) b**
European	72.1 (23.8)	58.5 (14.4)	62.2 (14.5)	40.1 (8.0)
Middle Eastern	**40.2 (4.9) a**	47.3 (15.9)	43.8 (8.5)	32.1 (7.1)
Asian	54.4 (7.7)	52.7 (6.3)	53.4 (5.5)	42.7 (3.9)
BMI category				
Thin	65.6 (7.5)	47.4 (7.8)	57.0 (5.7)	50.5 (6.9)
Healthy weight (ref)	55.0 (3.6)	57.6 (3.2)	56.3 (2.8)	**46.0 (2.4) b**
Overweight	54.1 (4.5)	59.9 (4.4)	56.9 (2.9)	**43.5 (3.8) b**
Obese	55.7 (7.4)	54.3 (11.2)	55.0 (7.9)	44.0 (5.2)

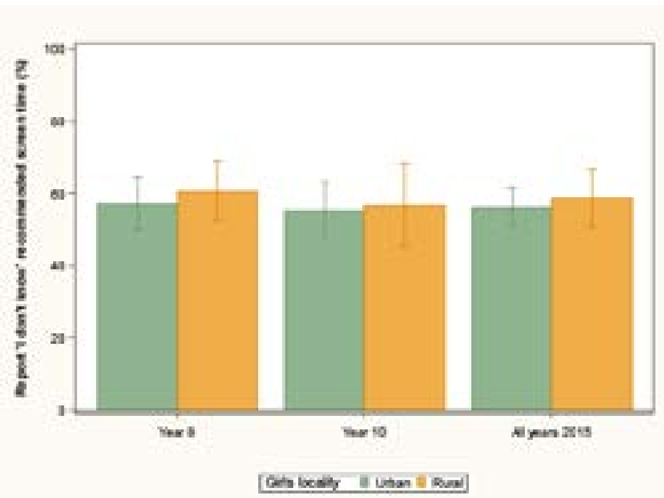
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

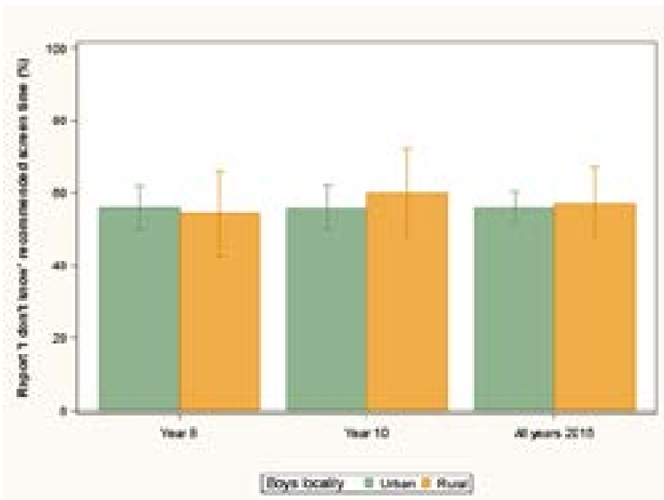
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

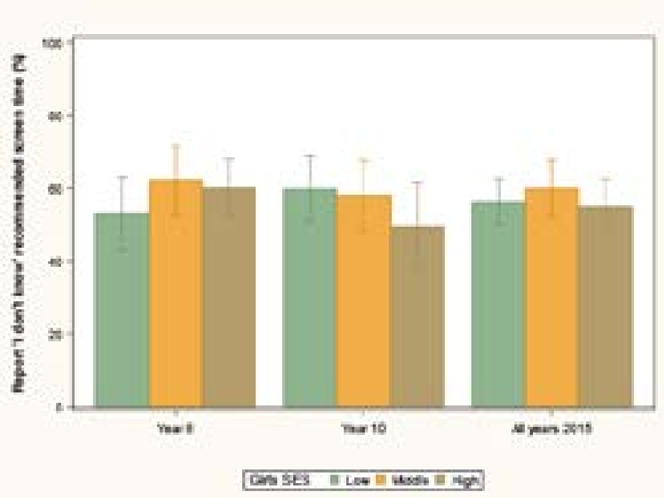
na *Indicates statistical significance could not be calculated due to low numbers.*

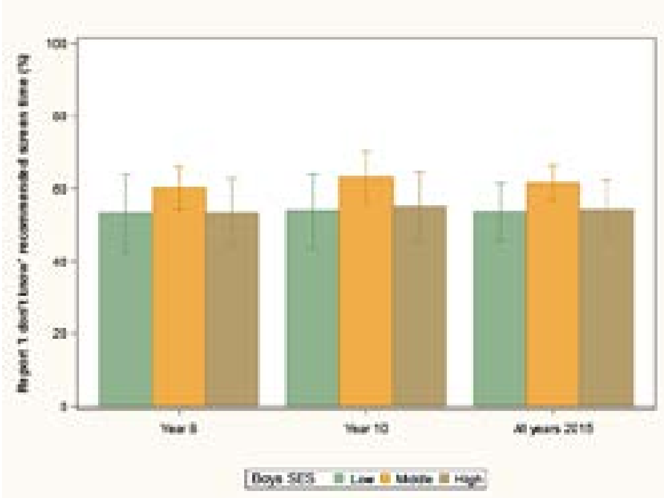
No letter means there was no statistical difference.

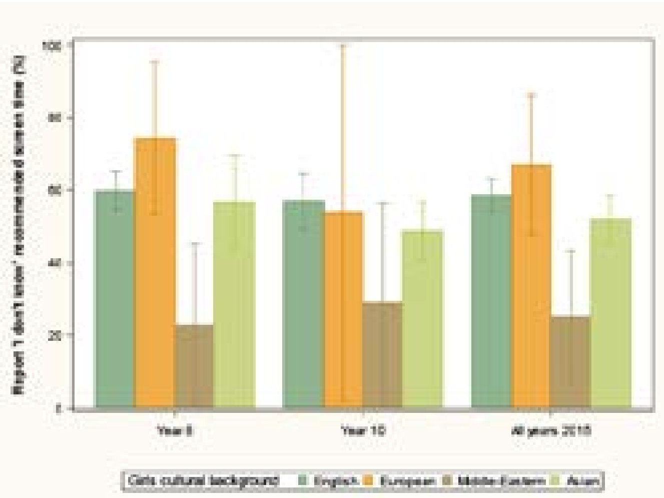
Figure 11.30 Prevalence of not knowing the recommended daily limits on screen time among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

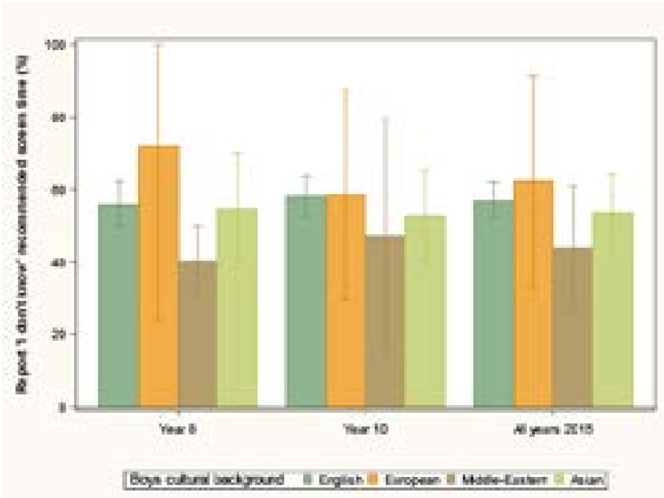


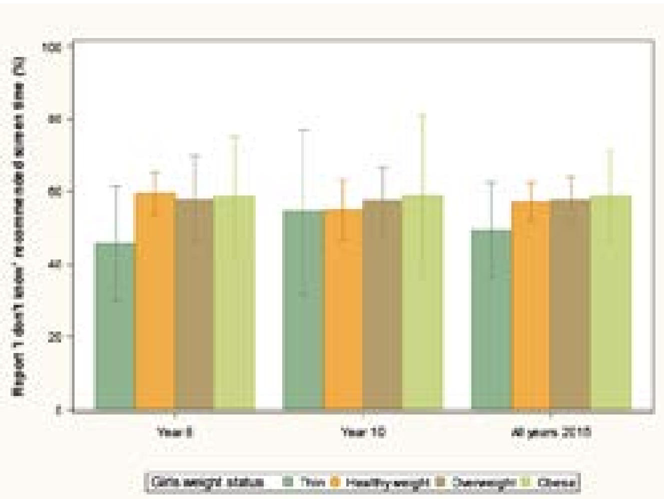


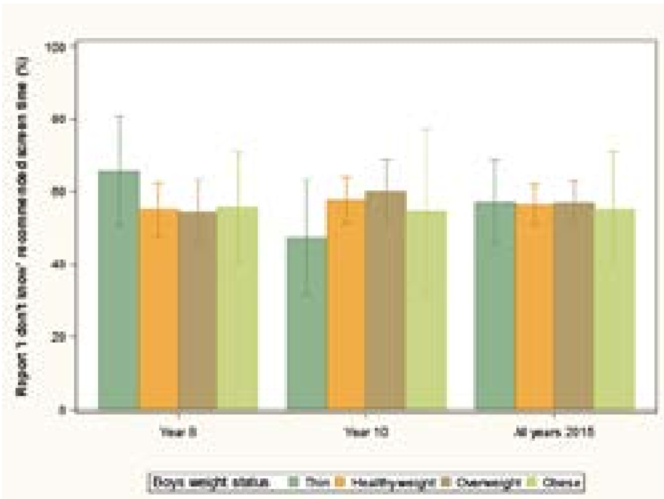

Report 'I don't know' recommended screen time (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Report 'I don't know' recommended screen time (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Report 'I don't know' recommended screen time (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Report 'I don't know' recommended screen time (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Report 'I don't know' recommended screen time (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthy-weight
Overweight
Obese


Report 'I don't know' recommended screen time (%)
100
80
60
40
20
0
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthy-weight
Overweight
Obese

TELEVISION IN THE BEDROOM

When televisions first appeared in homes in the 1950s they were located in a family room for family entertainment.[20] It is not clear exactly when, but televisions have slowly relocated into adolescents' bedrooms with 28% of Australian children age 5-17 years in 2011 having a television in their bedroom.[21] Similarly, it is not clear why televisions are commonplace in adolescents' bedrooms, but factors such as replacing old television sets, reducing family conflicts over program choices, and a means to increase parents' 'child-free' time through adolescents spending more time in their bedrooms are plausible explanations.[22] Adolescents with a television (TV) in their bedroom are at greater risk of developing overweight and obesity,[23] have lower academic performance,[24] reduced sleep quality[25] and insufficient sleep.[26] This section reports on the prevalence of TVs in adolescents' bedrooms.

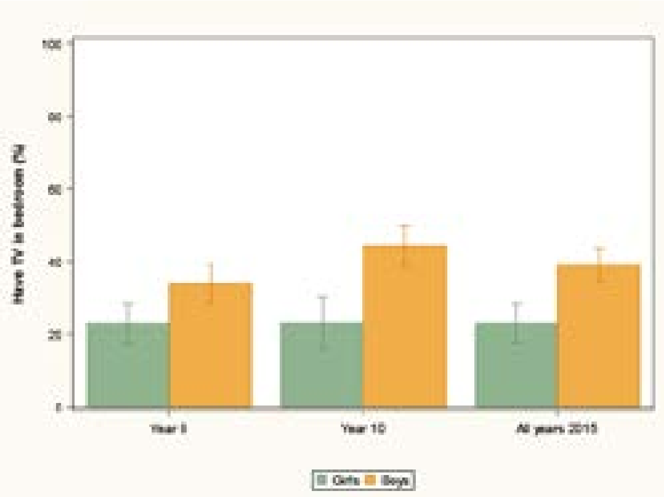
Table 11.31 and Figure 11.31 show the prevalence of having a TV in the bedroom among adolescents, by sex and year group in 2015, and in 2010 for comparison. Overall, 31% of adolescents had a television in their bedroom and the prevalence was significantly lower among girls (23%), compared with boys (39%). Overall, the prevalence of a television in their bedroom has significantly decreased among adolescents, from 41% in 2010 to 31% in 2015; among girls, from 34% in 2010 to 23% in 2015; and among boys, from 48% in 2010 to 39% in 2015.

Table 11.31 Prevalence of a television (TV) in the bedroom among adolescents in secondary school by sex and year group in 2015, and in 2010 for comparison (%, SE)

	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Had TV in the bedroom	28.5	(2.0)	33.6	(2.8)	31.0	(2.1)	**41.0**	**(2.3) b**
Did not have a TV in the bedroom	71.5	(2.0)	66.4	(2.8)	69.0	(2.1)	59.0	(2.3)
GIRLS								
Had TV in the bedroom	**22.9**	**(2.7) a**	**23.1**	**(3.5) a**	**23.0**	**(2.6) a**	**34.1**	**(2.3) b**
Did not have a TV in the bedroom	77.1	(2.7)	76.9	(3.5)	77.0	(2.6)	65.9	(2.3)
BOYS								
Had TV in the bedroom	33.9	(2.7)	44.2	(2.8)	39.0	(2.2)	**47.5**	**(3.2) b**
Did not have a TV in the bedroom	66.1	(2.7)	55.8	(2.8)	61.0	(2.2)	52.5	(3.2)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 11.31 Prevalence of a television (TV) in the bedroom among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that one in three (31%) of adolescents had a television in their bedroom. Table 11.32 and Figure 11.32 show the prevalence of a television in the bedroom among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, the prevalence of a television in the bedroom was significantly higher among adolescents from rural areas (39%), compared with adolescents from urban areas (28%).

Change between 2010-2015: Overall, the prevalence of a television in the bedroom significantly decreased among adolescents from urban areas, from 39% in 2010 to 28% in 2015; and among girls from urban areas, from 32% in 2010 to 20% in 2015.

Socio-economic status

2015: Overall, the prevalence of a television in the bedroom was significantly higher among adolescents from low SES (36%) and middle SES (35%) backgrounds, compared with adolescents from high SES backgrounds (22%). The prevalence was significantly higher among girls from low SES (30%) and middle SES (25%) backgrounds, compared with girls from high SES backgrounds (14%); and among boys from low SES (42%) and middle SES (45%) backgrounds, compared with boys from high SES backgrounds (30%).

Change between 2010-2015: Overall, the prevalence of a television in the bedroom significantly decreased among adolescents from low SES, from 50% in 2010 to 36% in 2015; and from middle SES backgrounds, from 46% in 2010 to 35% in 2015. The prevalence significantly decreased among girls from low SES (from 41% in 2010 to 30% in 2015), from middle SES (from 39% in 2010 to 25% in 2015) and from high SES backgrounds (24% in 2010 to 14% in 2015); and among boys from low SES backgrounds, from 58% in 2010 to 42% in 2015.

Cultural background

2015: Overall, the prevalence of a television in the bedroom was significantly lower among adolescents from European (17%) and Asian (15%) cultural backgrounds, compared with adolescents from English-speaking backgrounds (33%); among girls from European (7%) and Asian (12%) cultural backgrounds, compared with girls from English-speaking backgrounds (25%); and among boys from Asian cultural backgrounds (21%), compared with boys from English-speaking backgrounds (41%).

Change between 2010-2015: Overall, the prevalence of a television in the bedroom significantly decreased among adolescents from English-speaking backgrounds, from 43% in 2010 to 33% in 2015. The prevalence significantly decreased among girls from English-speaking (from 35% in 2010 to 25% in 2015), European (from 36% in 2010 to 7% in 2015), Middle Eastern (from 25% in 2010 to 8% in 2015) and Asian (20% in 2010 to 12% in 2015) cultural backgrounds. The prevalence significantly decreased among boys from English-speaking backgrounds, from 50% in 2010 to 41% in 2015.

Weight status

2015: Overall, there were no significant differences in the prevalence of a television in the bedroom between adolescents from different BMI categories.

Change between 2010-2015: Overall, the prevalence of a television in the bedroom significantly decreased among adolescents in the thin BMI category, from 40% in 2010 to 28% in 2015; in the healthy weight BMI category, from 40% in 2010 to 31% in 2015; in the overweight BMI category, from 45% in 2010 to 32% in 2015; and in the obese BMI category, from 51% in 2010 to 36% in 2015. The prevalence significantly decreased among girls in the healthy weight BMI category, from 33% in 2010 to 24% in 2015; and in the overweight BMI category, from 35% in 2010 to 19% in 2015.

Table 11.32 Prevalence of a television (TV) in the bedroom among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	26.2	(2.3)	30.1	(3.0)	28.2	(2.4)	**38.7**	**(2.8) b**
Rural	34.5	(4.7)	**43.0**	**(5.7) a**	**38.7**	**(4.6) a**	48.7	(3.9)
SES								
Low	**32.5**	**(3.5) a**	**39.1**	**(3.0) a**	**35.9**	**(2.8) a**	**49.9**	**(3.1) b**
Middle	**32.4**	**(3.7) a**	**38.4**	**(4.5) a**	**35.4**	**(3.3) a**	**46.1**	**(3.0) b**
High (ref)	20.9	(3.0)	22.8	(4.1)	21.8	(3.2)	28.2	(2.8)
Cultural background								
English-speaking (ref)	30.2	(2.2)	36.6	(2.9)	33.3	(2.2)	**42.8**	**(2.3) b**
European	28.8	(10.3)	**3.8**	**(3.8) a**	**16.6**	**(5.8) a**	28.6	(6.0)
Middle Eastern	21.7	(14.2)	25.2	(7.8)	23.3	(8.4)	29.8	(4.2)
Asian	**11.2**	**(3.2) a**	**18.3**	**(4.1) a**	**15.4**	**(3.0) a**	25.3	(5.5)
BMI category								
Thin	23.2	(4.9)	33.6	(7.2)	27.8	(4.1)	**40.2**	**(4.9) b**
Healthy weight (ref)	28.1	(2.5)	33.1	(3.3)	30.6	(2.5)	**39.5**	**(2.6) b**
Overweight	29.9	(2.8)	33.3	(4.1)	31.6	(2.6)	**44.8**	**(2.8) b**
Obese	34.2	(6.1)	36.7	(8.1)	35.5	(5.1)	**51.1**	**(4.7) b**
GIRLS								
Locality								
Urban (ref)	19.5	(2.6)	21.0	(3.6)	20.2	(2.7)	**32.2**	**(2.8) b**
Rural	32.5	(7.1)	29.3	(7.4)	30.9	(6.1)	40.3	(4.5)
SES								
Low	**28.6**	**(4.0) a**	**31.1**	**(4.6) a**	**29.8**	**(3.5) a**	**41.0**	**(4.1) b**
Middle	**26.8**	**(6.0) a**	24.0	(5.6)	**25.4**	**(4.7) a**	**38.8**	**(3.7) b**
High (ref)	13.8	(3.5)	14.3	(4.6)	14.1	(3.6)	**23.8**	**(2.9) b**
Cultural background								
English-speaking (ref)	24.4	(3.1)	25.9	(3.9)	25.2	(3.0)	**35.2**	**(2.5) b**
European	10.4	(5.3)	na		**6.7**	**(3.2) a**	**36.4**	**(10.8) b**
Middle Eastern	**4.9**	**(3.6) a**	11.6	(11.4)	7.7	(5.3)	**24.9**	**(5.8) b**
Asian	**13.8**	**(4.3) a**	**10.4**	**(3.4) a**	**11.8**	**(2.7) a**	**19.7**	**(3.9) b**
BMI category								
Thin	24.7	(6.6)	19.7	(9.2)	22.6	(5.7)	34.4	(5.4)
Healthy weight (ref)	23.0	(3.4)	24.1	(4.3)	23.5	(3.3)	**33.0**	**(2.7) b**
Overweight	20.8	(2.9)	18.2	(4.4)	19.4	(2.7)	**35.4**	**(3.2) b**
Obese	27.6	(8.2)	30.5	(15.5)	29.0	(8.2)	47.8	(8.3)

	2015			2010
	Year 8	Year 10	All years	All years
BOYS				
Locality				
Urban (ref)	33.0 (3.0)	39.7 (3.1)	36.3 (2.6)	44.8 (3.8)
Rural	36.2 (6.1)	**55.2 (5.5) a**	45.7 (4.9)	56.5 (5.0)
SES				
Low	36.5 (4.8)	**46.7 (3.2) a**	**41.8 (2.9) a**	**58.4 (3.1) b**
Middle	37.2 (4.7)	**52.2 (4.3) a**	**44.5 (3.5) a**	52.5 (3.7)
High (ref)	28.0 (3.5)	32.8 (4.9)	30.3 (3.5)	32.6 (3.9)
Cultural background				
English-speaking (ref)	35.5 (2.8)	47.1 (2.8)	41.1 (2.1)	**50.0 (3.2) b**
European	**85.5 (14.5) a**	**6.8 (6.6) a**	31.6 (12.2)	23.9 (7.3)
Middle Eastern	38.4 (25.0)	34.1 (11.2)	36.1 (9.1)	37.9 (5.0)
Asian	7.5 (5.2) a	30.0 (8.8)	**20.5 (6.6) a**	28.9 (8.6)
BMI category				
Thin	21.6 (7.4)	44.8 (8.3)	32.6 (5.9)	48.9 (7.2)
Healthy weight (ref)	33.2 (3.3)	42.6 (3.5)	37.8 (2.8)	45.6 (3.6)
Overweight	37.8 (4.2)	48.4 (5.5)	42.9 (3.6)	52.4 (4.1)
Obese	41.7 (10.6)	42.4 (10.7)	42.0 (7.3)	53.2 (6.2)

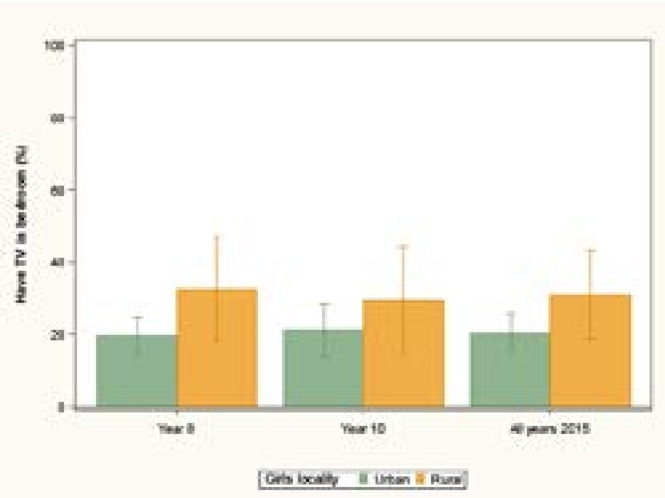
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

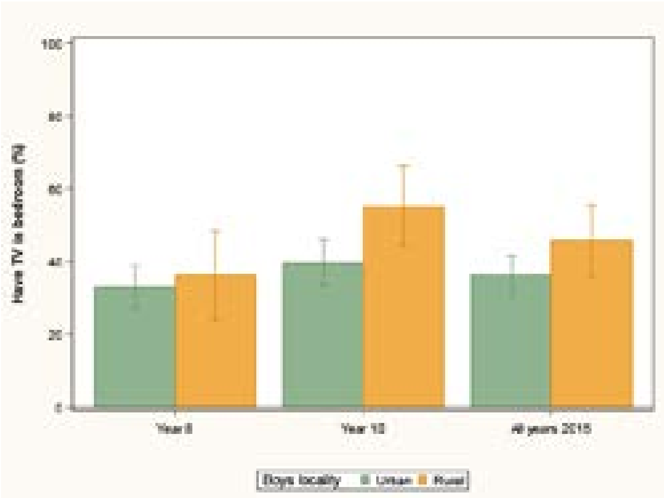
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

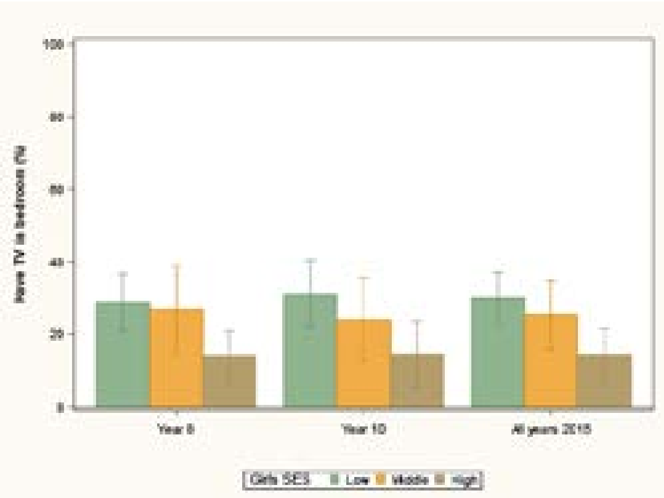
na *Indicates statistical significance could not be calculated due to low numbers.*

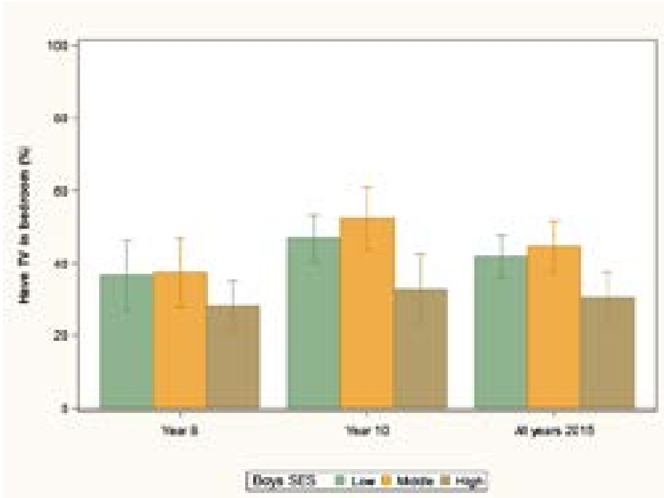
No letter means there was no statistical difference.

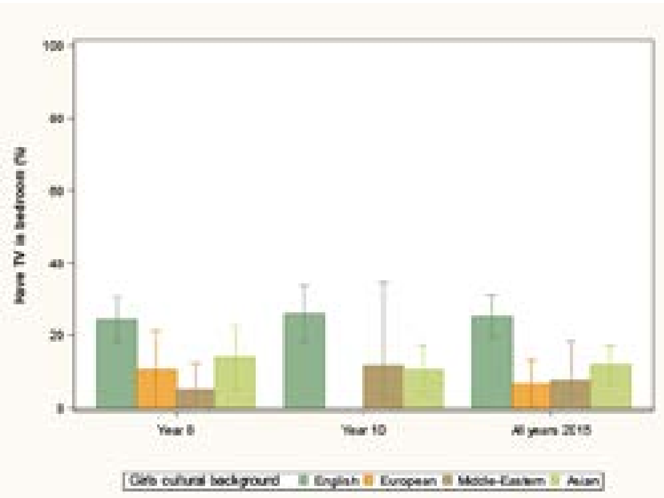
Figure 11.32 Prevalence of a television (TV) in the bedroom among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

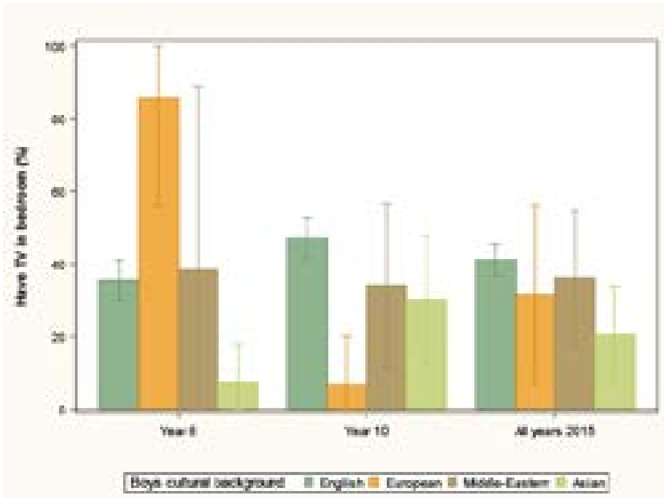


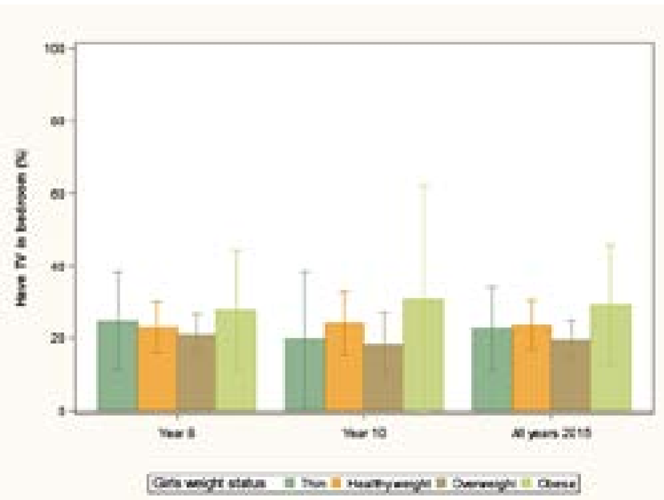


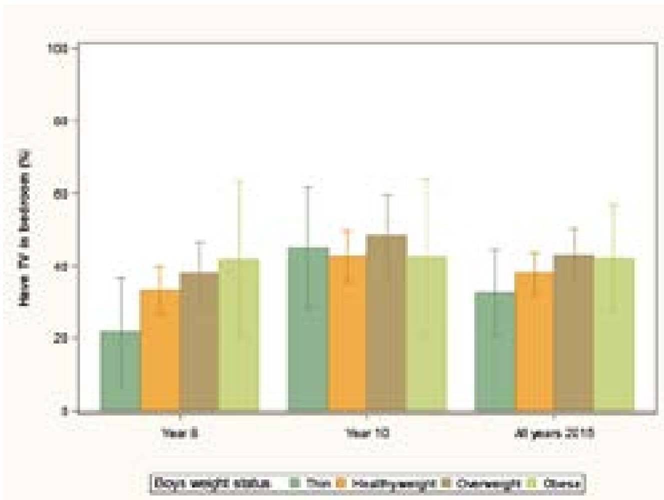

Have TV in bedroom (%)
Year 8
Year 10
All years 2015
Girls SES Low Middle High


Have TV in bedroom (%)
Year 8
Year 10
All years 2015
Boys SES Low Middle High


Have TV in bedroom (%)
Year 8
Year 10
All years 2015
Girls cultural background English European Middle-Eastern Asian


Have TV in bedroom (%)
Year 8
Year 10
All years 2015
Boys cultural background English European Middle-Eastern Asian


Have TV in bedroom (%)
Year 8
Year 10
All years 2015
Girls weight status Thin Healthyweight Overweight Obese


Have TV in bedroom (%)
Year 8
Year 10
All years 2015
Boys weight status Thin Healthyweight Overweight Obese

PARENTAL RULES ON CHILD'S SCREEN-TIME

There are good reasons to reduce adolescents' screen time. Excessive screen time is associated with a range of adverse health outcomes in adolescents including metabolic syndrome,[27] unfavourable body composition, decreased fitness, lowered scores for self-esteem and pro-social behaviour, and decreased academic achievement.[5] Screen time is the most popular sedentary leisure time activity among adolescents, with the majority exceeding the recommended daily limits on screen time *of no more than 2 hours a day.*[21] Screen time is the most modifiable of all sedentary behaviours and strategies such as imposing rules on screen time, hold promise to reduce children's screen use.

The family plays a pivotal role in shaping adolescents' screen time use and therefore it is important to engage families in efforts to reduce teenagers' screen time. Qualitative research suggests that there are many challenges faced by parents to reduce or restrict screen time, and television in particular. These include that limiting screen time will cause conflict in the home; increase bickering between siblings; may impose on parents' own time; may require monetary and community resources for other forms of entertainment; and that televisions in the home offer cheap entertainment, free babysitting, and educational opportunities.[28]

Other research suggests that parents think imposing screen time rules will help their child academically or improve family communications and relationships. Also, increasing awareness that other parents impose screen time rules plays an important role in parental intention to apply rules to their own adolescent's screen time. Health promotion efforts targeting these factors may assist strategies to reduce screen time.[29]

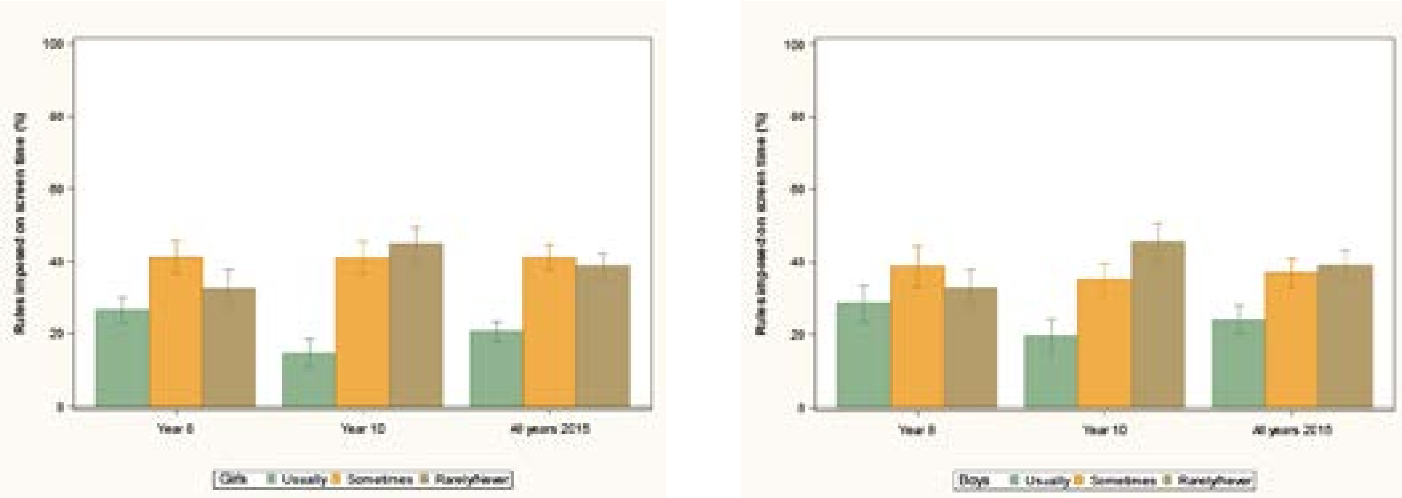
The following reports on the prevalence of parental rules for adolescent screen time. Table 11.33 and Figure 11.33 show the prevalence of parents imposing screen time rules among adolescents by sex and year group in 2015, and in 2010 for comparison. Overall, 22% of adolescents 'usually' had parental rules on screen time and 39% never/rarely had screen time rules. Overall, the prevalence of parents usually imposing screen time rules has significantly declined, from 27% in 2010 to 22% in 2015; and among girls, from 27% in 2010 to 21% in 2015.

Table 11.33 Prevalence of parental rules on screen time among adolescents in secondary school by sex and year group and in 2015, and in 2010 for comparison (%, SE)

	2015			2010
	Year 8	Year 10	All years	All years
ALL				
Usually	27.5 (1.6)	17.0 (1.6)	22.3 (1.2)	**27.3 (1.1) b**
Sometimes	39.8 (1.7)	38.0 (1.4)	38.9 (1.2)	36.1 (1.1)
Rarely/Never	32.7 (1.9)	44.9 (1.6)	38.8 (1.4)	36.6 (1.5)
GIRLS				
Usually	26.5 (1.7)	14.6 (1.9)	20.5 (1.4)	**26.5 (1.6) b**
Sometimes	41.0 (2.3)	40.8 (2.2)	40.9 (1.7)	37.3 (1.4)
Rarely/Never	32.5 (2.5)	44.6 (2.4)	38.6 (1.8)	36.2 (1.7)
BOYS				
Usually	28.5 (2.5)	19.5 (2.3)	24.1 (1.9)	28.1 (1.4)
Sometimes	38.6 (2.8)	35.1 (2.2)	36.9 (2.0)	34.9 (1.5)
Rarely/Never	32.9 (2.4)	45.3 (2.6)	39.0 (2.0)	37.0 (1.9)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents.*
na *Indicates statistical significance could not be calculated due to low numbers.*
No letter means there was no statistical difference.

Figure 11.33 Prevalence of parental rules on screen time among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that more than one in three (39%) of adolescents never/rarely have screen time rules. Table 11.34 and Figure 11.34 show the prevalence of parents never/rarely imposing rules on adolescents screen time by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison.

Locality

2015: Overall, there was no significant difference in the prevalence of parents never/rarely imposing screen time rules between adolescents from urban and rural areas.

Change between 2010-2015: Overall, there were no significant changes in the prevalence of parents never/rarely imposing screen time rules among adolescents from urban and from rural areas.

Socio-economic status

2015: Overall, the prevalence parents never/rarely imposing screen time rules was significantly higher among adolescents from middle SES backgrounds (43%), compared with adolescents from high SES backgrounds (37%).

Change between 2010-2015: Overall, there were no significant changes in the prevalence of parents never/rarely imposing screen time rules among adolescents from different SES backgrounds.

Cultural background

2015: Overall, the prevalence of parents never/rarely imposing screen time rules was significantly lower among girls from Middle Eastern cultural backgrounds (21%), compared with girls from English-speaking backgrounds (39%).

Change between 2010-2015: Overall, the prevalence of parents never/rarely imposing screen time rules significantly increased among boys from European cultural backgrounds, from 18% in 2010 to 54% in 2015.

Weight status

2015: The prevalence of parents never/rarely imposing screen time rules was significantly higher among boys in the obese BMI category (59%), compared with boys in the healthy weight BMI category (38%).

Change between 2010-2015: Overall, there were no significant changes in the prevalence of parents never/rarely imposing screen time rules among adolescents from different BMI categories.

Table 11.34 Prevalence of parents never/rarely imposing rules on screen time among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015, and in 2010 for comparison (%, SE)

	2015						2010	
	Year 8		Year 10		All years		All years	
ALL								
Locality								
Urban (ref)	31.4	(2.1)	43.1	(1.9)	37.3	(1.7)	35.3	(1.6)
Rural	35.9	(4.2)	49.7	(2.9)	42.9	(2.8)	41.0	(3.5)
SES								
Low	31.7	(2.9)	42.3	(3.1)	37.1	(2.5)	38.3	(2.8)
Middle	35.7	(3.8)	**49.8**	**(2.4) a**	**42.7**	**(2.3) a**	39.4	(2.5)
High (ref)	30.9	(2.4)	43.2	(2.4)	36.9	(1.7)	32.3	(1.9)
Cultural background								
English-speaking (ref)	33.1	(1.9)	46.1	(1.6)	39.5	(1.3)	37.3	(1.5)
European	37.7	(10.0)	49.5	(14.6)	43.4	(9.0)	25.9	(6.2)
Middle Eastern	31.9	(8.0)	33.8	(11.7)	32.8	(5.8)	33.7	(4.5)
Asian	29.0	(5.7)	40.6	(5.3)	35.8	(5.1)	31.5	(3.8)
BMI category								
Thin	30.1	(5.4)	38.2	(5.7)	33.7	(3.7)	37.3	(3.6)
Healthy weight (ref)	32.9	(2.0)	42.7	(2.1)	37.9	(1.7)	36.0	(1.5)
Overweight	31.2	(3.2)	49.9	(4.0)	40.4	(2.7)	36.8	(3.3)
Obese	38.5	(6.0)	56.7	(10.0)	47.7	(6.0)	40.1	(6.5)
GIRLS								
Locality								
Urban (ref)	30.4	(2.9)	46.0	(2.5)	38.3	(2.1)	35.3	(1.9)
Rural	38.4	(5.3)	40.3	(4.5)	39.3	(3.6)	39.2	(3.9)
SES								
Low	32.7	(3.0)	38.3	(4.6)	35.5	(3.1)	36.4	(3.2)
Middle	38.1	(6.0)	48.2	(3.6)	43.2	(3.7)	38.6	(3.2)
High (ref)	27.4	(2.9)	47.6	(3.5)	37.6	(2.3)	33.8	(2.2)
Cultural background								
English-speaking (ref)	33.5	(2.6)	45.0	(2.6)	39.3	(1.9)	36.5	(1.8)
European	22.1	(11.5)	61.7	(17.1)	36.3	(11.0)	39.5	(11.4)
Middle Eastern	**14.6**	**(5.5) a**	30.3	(15.7)	**21.1**	**(7.0) a**	36.3	(7.3)
Asian	31.8	(8.4)	44.6	(4.8)	39.3	(5.4)	29.7	(5.6)
BMI category								
Thin	31.8	(7.2)	33.4	(8.2)	32.5	(5.4)	30.8	(4.6)
Healthy weight (ref)	31.7	(2.9)	43.3	(3.2)	37.7	(2.3)	36.4	(1.9)
Overweight	35.2	(4.2)	51.7	(6.2)	43.6	(3.9)	37.7	(3.9)
Obese	33.1	(8.3)	40.9	(15.1)	36.8	(9.0)	32.0	(10.0)

	2015						2010	
	Year 8		Year 10		All years		All years	
BOYS								
Locality								
Urban (ref)	32.5	(2.7)	40.1	(2.4)	36.2	(1.8)	35.2	(2.0)
Rural	33.8	(6.0)	**58.0**	**(5.9) a**	46.0	(5.1)	42.8	(4.3)
SES								
Low	30.6	(5.1)	46.0	(4.7)	38.6	(4.0)	40.1	(3.7)
Middle	33.6	(3.1)	**51.4**	**(3.6) a**	42.3	(2.5)	40.2	(3.0)
High (ref)	34.5	(3.9)	38.1	(3.8)	36.2	(3.0)	30.7	(2.7)
Cultural background								
English-speaking (ref)	32.8	(2.6)	47.1	(2.7)	39.8	(2.1)	38.1	(2.0)
European	**85.5**	**(14.5) a**	39.9	(20.5)	54.2	(12.9)	**17.7**	**(6.8) b**
Middle Eastern	49.2	(9.6)	36.1	(16.9)	42.4	(9.2)	29.3	(7.9)
Asian	25.2	(5.6)	34.8	(8.4)	30.7	(6.3)	32.7	(4.8)
BMI category								
Thin	28.4	(7.9)	42.1	(8.6)	34.8	(6.0)	46.9	(6.7)
Healthy weight (ref)	34.2	(3.0)	42.0	(3.5)	38.1	(2.6)	35.6	(2.0)
Overweight	27.7	(4.5)	48.1	(6.0)	37.5	(4.2)	36.2	(4.5)
Obese	44.6	(8.3)	**71.1**	**(9.8) a**	**58.6**	**(7.2) a**	45.3	(7.8)

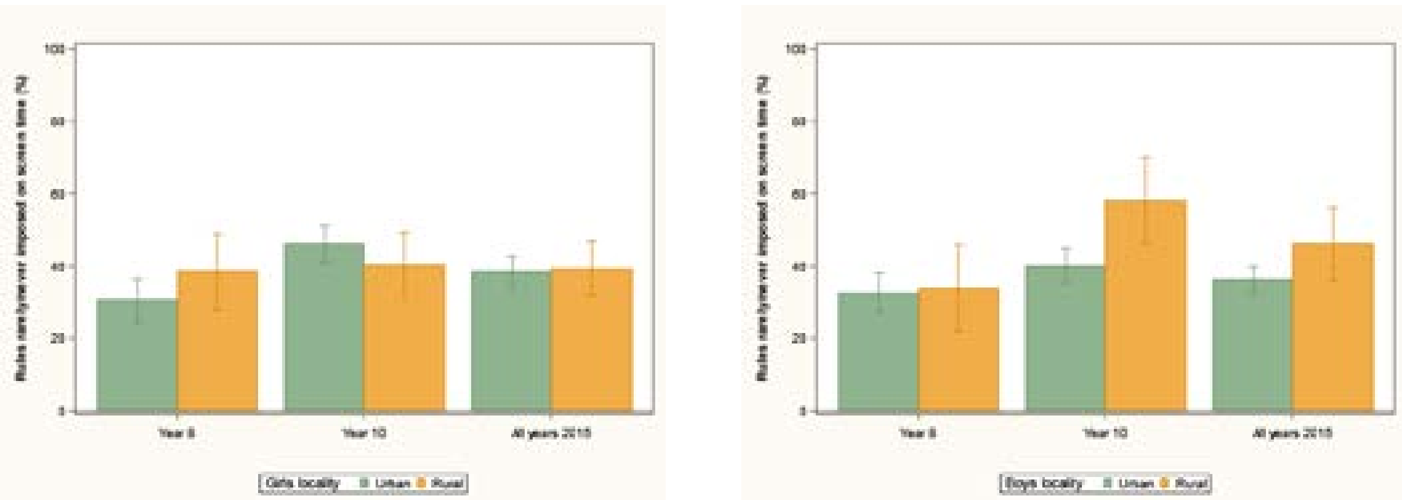
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking background; and thin, overweight and obese compared with healthy weight BMI category.*

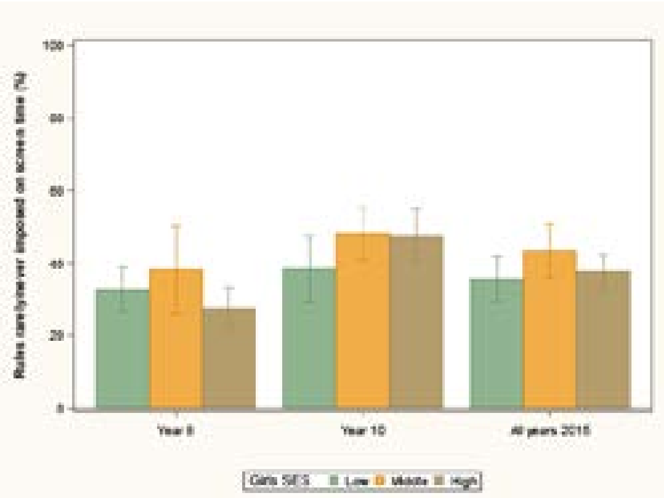
b *Indicates statistically significant difference at P < 0.05 between 2010 and 2015 proportions for all adolescents for each socio-demographic characteristic.*

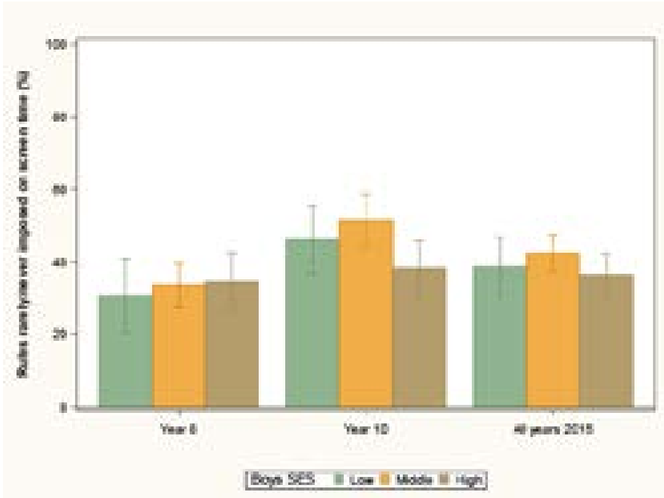
na *Indicates statistical significance could not be calculated due to low numbers.*

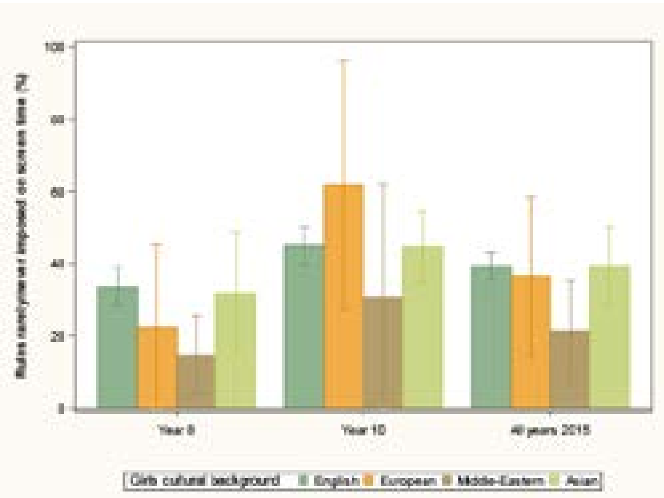
No letter means there was no statistical difference.

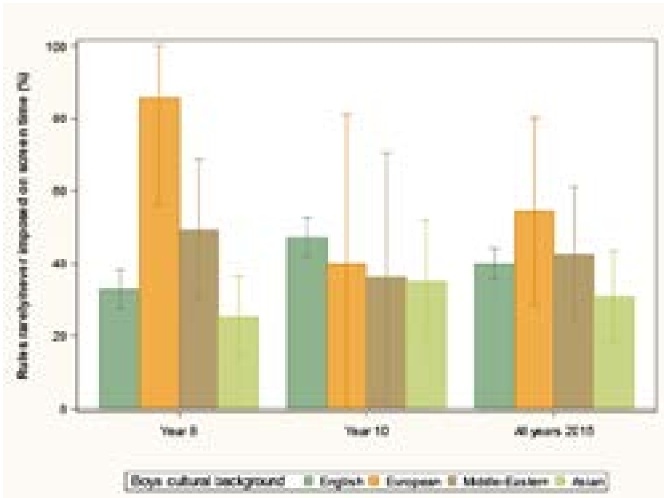
Figure 11.34 Prevalence of parents never/rarely imposing rules on screen time among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

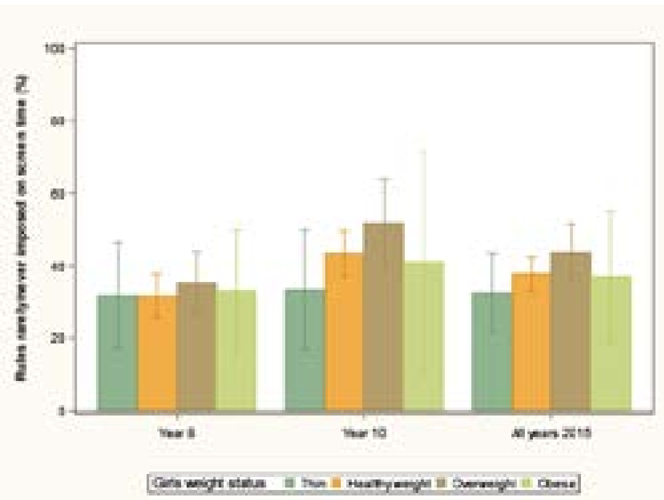


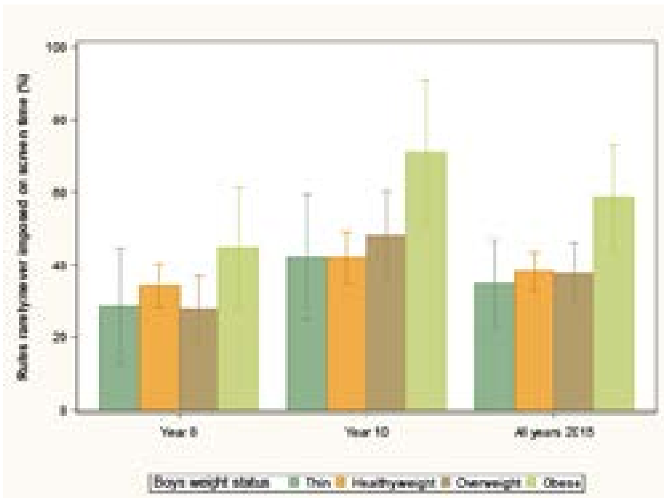

Rules rarely/never imposed on screen time (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls SES
Low
Middle
High


Rules rarely/never imposed on screen time (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys SES
Low
Middle
High


Rules rarely/never imposed on screen time (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Rules rarely/never imposed on screen time (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Rules rarely/never imposed on screen time (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Girls weight status
Thin
Healthyweight
Overweight
Obese


Rules rarely/never imposed on screen time (%)
0
20
40
60
80
100
Year 8
Year 10
All years 2015
Boys weight status
Thin
Healthyweight
Overweight
Obese

SUMMARY OF THE SEDENTARY BEHAVIOURS OF ADOLESCENTS IN SECONDARY SCHOOL

The table below summarises the indicators of sedentary behaviour ('sitting time') in adolescents in secondary school.

Sitting indicator	Guidelines	SPANS cut point	Time (median) or prevalence 2010	Time (median) or prevalence 2015	Significant subgroup findings for 2015* & change between 2010-2015
WEEKDAYS					
Total sitting time	To break up long periods of sitting as often as possible.[19]	None	5:19 hours	5:32 hours	No significance testing done
Screen time	Limit use of electronic media for entertainment (e.g., television, seated electronic games and computer use) to no more than two hours a day – lower levels are associated with reduced health risks[19]	<2 hours/day	40%	36%	**2015:** Overall, there were no significant differences in the prevalence of meeting the recommended daily limits on screen time on a weekday between adolescents from different socio-demographic backgrounds or BMI categories **Change between 2010-2015:** Overall, and within subgroups, there were no significant changes in meeting the recommended daily limits on screen time on weekdays between 2010 and 2015
WEEKEND DAYS					
Total sitting time	To break up long periods of sitting as often as possible.[19]	None	8:00 hours	8:08 hours	No significance testing done
Screen time	Limit use of electronic media for entertainment (e.g., television, seated electronic games and computer use) to no more than two hours a day – lower levels are associated with reduced health risks.[19]	<2 hours/day	15%	17%	**2015:** Overall, the prevalence of meeting the recommendation was significantly higher among girls and among adolescents from rural areas **Change between 2010-2015:** Overall, there were no significant changes in meeting the recommended daily limits on screen time on weekdays between 2010 and 2015. Within subgroups, meeting the recommended daily limits on screen time on weekend days significantly increased among adolescents from Middle Eastern cultural background

Sitting indicator	Guidelines	SPANS cut point	Time (median) or prevalence		Significant subgroup findings for 2015* & change between 2010-2015
			2010	2015	
HOME SCREEN ENVIRONMENT					
Awareness of national recommended daily limits on screen time	Limit use of electronic media for entertainment (e.g., television, seated electronic games and computer use) to no more than two hours a day – lower levels are associated with reduced health risks.[19]	Don't know (recommendation)	48%	57% sig	**2015:** Overall, the prevalence of not knowing the recommendation was significantly lower among adolescents from Middle Eastern cultural backgrounds **Change between 2010-2015:** Overall, the proportion of adolescents who did not know the recommended daily limits on screen time significantly increased between 2010 and 2015. Within subgroups, not knowing the recommended daily limits on screen time significantly increased among adolescents from urban areas, middle and high SES backgrounds, English-speaking backgrounds and from healthy weight and overweight BMI categories
Television in the bedroom	There are no specific guidelines	TV in bedroom	41%	31% sig	**2015:** Overall, the prevalence of a TV in the bedroom was significantly lower among girls, among adolescents from European and Asian cultural backgrounds; and significantly higher among adolescents from low and middle SES backgrounds **Change between 2010-2015:** Overall, the proportion of adolescents with a TV in their bedroom significantly decreased between 2010 and 2015. Within subgroups, a TV in the bedroom significantly decreased among adolescents from urban areas, low and middle SES backgrounds, English-speaking backgrounds, and among adolescents from each BMI category
Parent imposes screen time rules	There are no specific guidelines	Never/rarely	37%	39%	**2015:** Overall, there were no significant differences in the prevalence of parents imposing screen time rules between adolescents from different socio-demographic backgrounds or BMI categories **Change between 2010-2015:** Overall, and within subgroups, there were no significant changes in the prevalence of parents imposing screen time rules between 2010 and 2015

sig *Indicates statistically significant difference at P < 0.05; * Comparisons are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

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CHAPTER 12: SLEEP

SNAPSHOT: ALL CHILDREN & ADOLESCENTS AGE 5 TO 16 YEARS

76%
of children and adolescents met the sleep recommendation on school nights

17%
of children and adolescents 'usually' used electronic media during sleep time

2015

- **Mean bedtime on school nights was 8.58pm**
- **Mean wake-up time on school days was 6.57am**
- **Mean sleep duration on school nights was 9 hours 59 minutes**
- **76% of children and adolescents met the sleep recommendation on school nights**
- Children and adolescents from Asian cultural backgrounds (82%) were more likely to meet the sleep recommendation on school days, compared with children from English-speaking backgrounds (75%)
- **Mean bedtime on non-school nights was 9.55pm**
- **Mean wake-up time on non-school days was 8.11am**
- **Mean sleep duration on non-school nights was 10 hours and 16 minutes**
- **68% of children and adolescents met the sleep recommendation on non-school nights**
- Children and adolescents from low SES backgrounds (64%) were less likely to meet the sleep recommendation on non-school nights, compared with children and adolescents from high SES backgrounds (71%)
- Children and adolescents in the thin (63%) and overweight (66%) BMI categories were less likely to meet the sleep recommendation on non-school nights, compared with children and adolescents in the healthy weight BMI category (69%)
- **17% of children and adolescents 'usually' used electronic media during sleep time**
- Children and adolescents from low SES backgrounds (23%) were more likely to 'usually' use electronic media during sleep time, compared with children from high SES backgrounds (13%)
- Children and adolescents from Middle Eastern (23%) and from Asian cultural backgrounds (23%) were more likely to 'usually' use electronic media during sleep time, compared with children and adolescents from English-speaking backgrounds (16%)
- Children and adolescents in the overweight (21%) BMI category were more likely to usually use electronic media during sleep time, compared with children and adolescents in the healthy weight BMI category (16%)

CONTEXT

Public health concerns about children's and adolescents' sleep date back more than a century.[1] Inadequate and poor quality and quantity of sleep in children has been associated with a range of physical and psycho-social health problems,[2] including learning and cognitive development,[3] memory,[4] academic performance,[5, 6] greater risk of accidental injury,[7] poorer neuro-psychological functioning in adolescence,[8] insulin resistance[9], cardio-metabolic risk[10] and obesity.[11-13]

In the 21st century, the rapid development and adoption of electronic screen devices in daily life has led to increasing concerns about children's and adolescents' use of electronic devices (e.g., smart phones, tablets, laptop computers), particularly around bedtime, and the impact of screen technology on sleep habits.[14, 15] A recent Australian study reported that 70% of adolescents had two or more electronic devices in their bedroom at night, including mobile phones, computers, televisions and radios.[16] Among primary school age children computer use is associated with unfavourable changes in sleep duration and bedtimes and, for boys in particular, the presence of a television in the bedroom predicts poorer sleep habits and irregularity in sleep patterns.[17]

There are several reasons why excessive screen time, particularly computer games, may have an adverse impact on child and adolescents' sleep hygiene, including increased physiological and mental arousal causing difficulties falling asleep.[18] Screen devices can influence sleep architecture though decreasing slow-wave sleep, REM-sleep and sleep efficiency,[18] and exposure can cause a deterioration in verbal cognitive performance, which may in turn affect child and adolescent sleep, learning and memory.[19]

More recently, software improvements in the efficiency, brightness and contrast of light-emitting devices (LEDs) to enhance young children's daytime use of screen games (e.g., Angry Birds) through enhancing short-wavelength light emission have been associated with suppressed melatonin secretion and increased alertness, which in turn may delay the onset of sleep.[20, 21] Melatonin is an important hormone in natural circadian rhythm sleep-wake cycles.[22] Melatonin is produced by the pineal gland and normally increases in the evening in response to darkness, but exposure to LED lighting decreases melatonin levels and 'tricks' the body into thinking it should stay awake.[23]

For the current generation of children and adolescents, different types of electronic media play a significant role in everyday life and electronic media are recognised as essential to modern living. Efforts to help children and adolescents to use electronic media appropriately by encouraging them to limit the amount of time spent on them before bed and throughout the day may help decrease the risks associated with overuse and loss of sleep. Based on the evidence of the importance of good sleep practices, information on child and adolescent bedtime, wake-up time, and sleep duration on school and non-school days, and use of electronic media during sleep time, were included for the first time in SPANS 2015.

This chapter reports on the sleep hygiene of children (i.e., Kindergarten Years 2, 4 and 6) and adolescents (i.e., Years 8 and 10) sampled by sex, year group, socio-demographic characteristics and BMI category. The findings are presented separately for children in primary school and adolescents in secondary school. The prevalence estimates (%) need to be interpreted along with their standard errors (SE); a large standard error means a less precise estimate.

PRIMARY SCHOOL

For healthy children with normal sleep, the recommendations are that primary school children age 6-13 years sleep between 9 and 11 hours.[24] For reporting purposes, we dichotomised primary school age children's sleep as *Within recommended sleep time = 9.0 to 11.0 hours a night and < 9.0 and > 11.0 as Outside recommended sleep time* for both school and non-school nights.

A methodological factor to consider in the interpretation of the findings on children in primary school is the difference in respondent. Parents reported on behalf of their child in Years K, 2 and 4, while children in Year 6 self-reported, which may reflect differences in the reported prevalence of indicators of sleep time between younger primary years and Year 6. The combined prevalence in primary school will reflect these differences in data collection methods.

BEDTIME, WAKE-UP TIME AND SLEEP DURATION ON SCHOOL NIGHTS

There are no specific bedtime or wake-up time recommendations for children, but establishing a consistent bedtime during childhood is recommended as part of healthy sleep hygiene habits.[25] Parents cannot control school start times, hence wake-up on school days is predetermined, but parents can improve sleep hygiene by setting a fixed bedtime. Primary school age children are usually tired after school and a bedtime guide is around 7.30pm for children age 6-9 years and 9pm for 10-12 year olds.

Participants reported the time they usually go to bed and wake up, and sleep duration is calcuated as the elapsed time between bedtime and wake-up. It is important to note that these are self-reported data, and cannot objectively determine the total sleep period. Nonetheless, self-reported sleep time has been used for over two decades in adolescent health research, and poor sleep has been consistently correlated with health and mental health outcomes.[26-29] Further, sleep onset latency (i.e., the time it takes to transition between full wakefulness and sleep), or episodes of sleep disruption, cannot be determined from these questions.

Table 12.1 shows the average bedtime, wake-up time and duration of sleep on school nights among children by sex and year group in 2015. Overall, children went to bed at approximately 8.30pm on a school night and bedtime appeared to increase with age. On school days, children generally woke up at 7am and this appeared to be consistent across year groups. On a school night the mean sleep duration was approximately 10½ hours, with children in Year K sleeping for approximately 11 hours and Year 6 children approximately 10 hours a night. Bedtime, wake-up time and sleep duration appear to be broadly consistent between boys and girls within year groups, and older children appear to have later bedtimes and shorter sleep duration.

Table 12.1 Average (mean) bedtime, wake-up time and sleep duration on school nights among children in primary school by sex and year group in 2015 (time, SE)

	2015									
	Year K		Year 2		Year 4		Year 6		All years	
ALL										
Go to bed	20:04	(0:04)	20:17	(0:03)	20:29	(0:03)	20:50	(0:03)	20:24	(0:03)
Wake up	7:01	(0:02)	7:01	(0:02)	7:00	(0:02)	6:58	(0:02)	7:00	(0:01)
Sleep duration	10:56	(0:02)	10:44	(0:02)	10:31	(0:02)	10:08	(0:03)	10:36	(0:02)
GIRLS										
Go to bed	20:07	(0:04)	20:17	(0:03)	20:30	(0:03)	20:48	(0:03)	20:24	(0:03)
Wake up	7:04	(0:02)	7:03	(0:02)	7:02	(0:02)	7:00	(0:02)	7:02	(0:02)
Sleep duration	10:57	(0:03)	10:46	(0:03)	10:32	(0:02)	10:11	(0:04)	10:38	(0:03)
BOYS										
Go to bed	20:02	(0:04)	20:18	(0:03)	20:28	(0:03)	20:52	(0:04)	20:24	(0:03)
Wake up	6:58	(0:02)	6:59	(0:02)	6:59	(0:02)	6:57	(0:02)	6:58	(0:02)
Sleep duration	10:56	(0:03)	10:41	(0:03)	10:31	(0:02)	10:04	(0:03)	10:34	(0:02)

Note: No significance testing was conducted.

MEETING SLEEP RECOMMENDATION ON SCHOOL NIGHTS

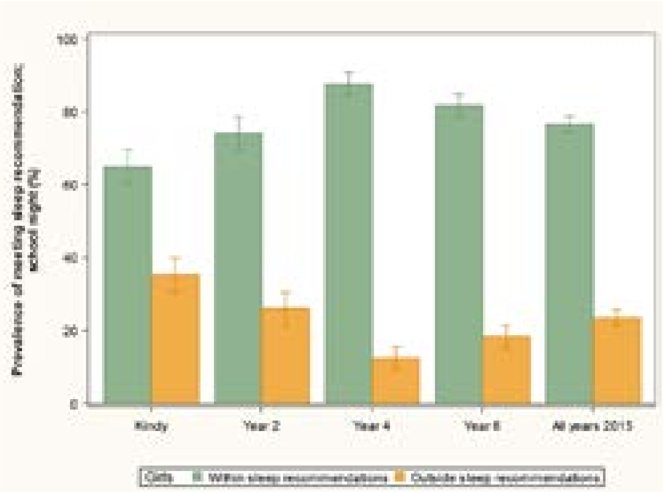
Table 12.2 and Figure 12.1 show the prevalence of meeting the sleep recommendation on school nights among children by sex and year group in 2015. Overall, 77% of children met the sleep recommendation on a school day. The prevalence of meeting the sleep recommendation appeared to be broadly consistent between boys and girls within year groups and appeared to increase with age.

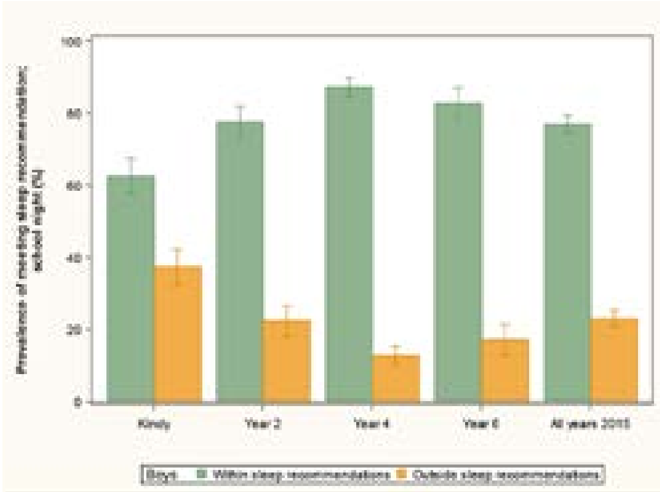
Table 12.2 Prevalence of meeting sleep recommendation on school nights among children in primary school by sex and year group in 2015 (%, SE)

	2015									
	Year K		Year 2		Year 4		Year 6		All years	
ALL										
Within sleep recommendations	63.7	(1.8)	75.8	(1.7)	87.5	(1.0)	82.2	(1.3)	76.8	(0.9)
Outside sleep recommendations	36.3	(1.8)	24.2	(1.7)	12.5	(1.0)	17.8	(1.3)	23.2	(0.9)
GIRLS										
Within sleep recommendations	64.8	(2.3)	74.0	(2.3)	87.6	(1.5)	81.7	(1.5)	76.6	(1.1)
Outside sleep recommendations	35.2	(2.3)	26.0	(2.3)	12.4	(1.5)	18.3	(1.5)	23.4	(1.1)
BOYS										
Within sleep recommendations	62.6	(2.4)	77.6	(2.1)	87.2	(1.3)	82.8	(2.1)	77.0	(1.2)
Outside sleep recommendations	37.4	(2.4)	22.4	(2.1)	12.8	(1.3)	17.2	(2.1)	23.0	(1.2)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
No letter means there was no statistical difference.

Figure 12.1 Prevalence of meeting sleep recommendation on school nights among children in primary school by sex and year group in 2015 (%, 95%CI)





SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 77% of children in primary school met the sleep recommendation of between 9 and 11 hours on school nights. Table 12.3 and Figure 12.2 show the prevalence of meeting the sleep recommendation on school nights among children by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, the prevalence of meeting the sleep recommendation on a school day was not significantly different between children from urban and rural areas.

Socio-economic status

2015: Overall, the prevalence of meeting the sleep recommendation on a school day was not significantly different between children from different SES backgrounds.

Cultural background

2015: Overall, the prevalence of meeting the sleep recommendation was significantly higher among children from Asian cultural backgrounds (85%), compared with children from English-speaking backgrounds (76%). The prevalence was significantly higher among girls from Asian cultural backgrounds (86%), compared with girls from English-speaking (75%) backgrounds; and among boys from Asian cultural backgrounds (84%), compared with boys from English-speaking (77%) backgrounds.

Weight status

2015: Overall, the prevalence of meeting the sleep recommendation was significantly higher among children in the overweight (81%) and in the obese (83%) BMI categories, compared with children in the healthy weight BMI category (76%). The prevalence was significantly higher among girls in the overweight BMI category (81%), compared with girls in the healthy BMI category (75%); and higher among boys in the obese (84%) BMI category, compared with boys in the healthy BMI category (76%).

Table 12.3 Prevalence of meeting the sleep recommendation on school nights in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

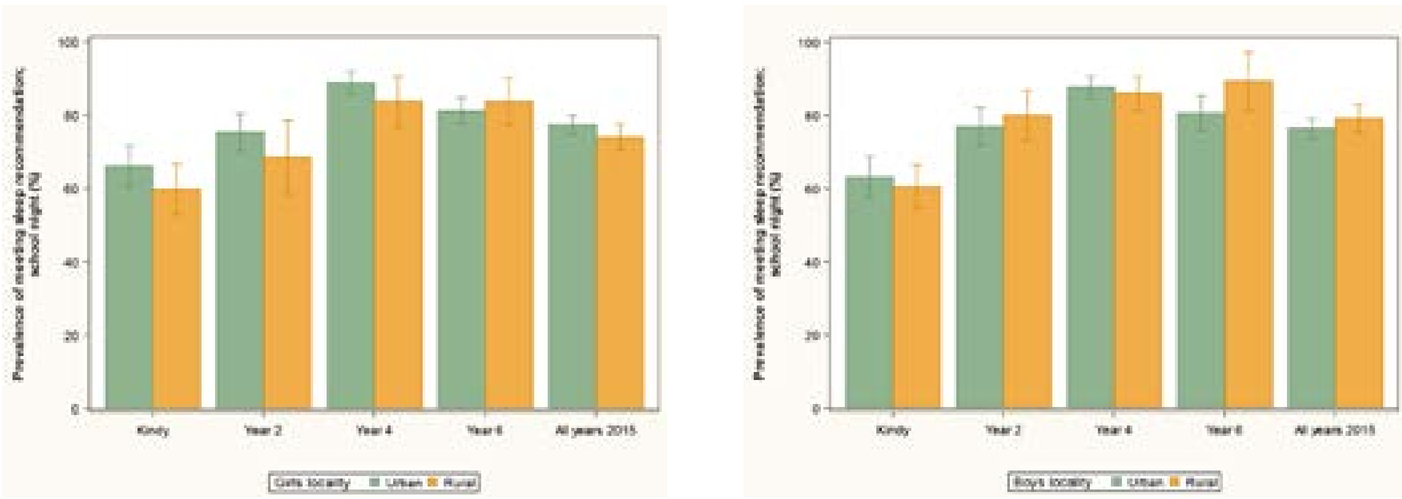
	2015									
	Year K		Year 2		Year 4		Year 6		All years	
ALL										
Locality										
Urban (ref)	64.6	(2.3)	76.1	(2.0)	88.3	(1.1)	80.9	(1.3)	76.9	(1.1)
Rural	60.1	(1.9)	74.6	(2.7)	84.8	(1.9)	86.7	(2.9)	76.7	(1.5)
SES										
Low	69.1	(3.0)	78.3	(3.4)	86.2	(2.8)	78.9	(3.5)	77.9	(1.7)
Middle	60.9	(2.2)	74.8	(2.7)	88.1	(1.8)	85.1	(2.0)	77.2	(1.2)
High (ref)	63.2	(3.2)	75.4	(2.5)	87.6	(1.4)	81.3	(1.3)	76.0	(1.7)
Cultural background										
English-speaking (ref)	61.6	(1.9)	74.7	(1.6)	86.4	(1.0)	83.0	(1.3)	76.0	(0.9)
European	76.6	(14.6)	74.1	(9.4)	94.2	(5.3)	74.3	(11.4)	78.2	(6.3)
Middle Eastern	68.7	(12.1)	74.7	(9.4)	**94.2**	**(2.0) a**	73.0	(8.0)	77.7	(2.6)
Asian	**79.9**	**(4.6) a**	**90.6**	**(2.9) a**	**94.9**	**(2.4) a**	74.7	(5.0)	**85.0**	**(1.9) a**
BMI category										
Thin	64.4	(6.9)	77.2	(4.8)	81.9	(4.4)	85.0	(4.6)	77.0	(2.9)
Healthy weight (ref)	62.2	(2.0)	74.2	(1.8)	87.1	(1.2)	82.1	(1.5)	75.5	(1.1)
Overweight	65.5	(4.4)	79.1	(3.2)	89.5	(2.6)	83.1	(2.6)	**80.7**	**(1.6) a**
Obese	**77.7**	**(5.7) a**	82.6	(5.5)	91.1	(2.8)	78.3	(5.1)	**82.9**	**(2.7) a**
GIRLS										
Locality										
Urban (ref)	66.1	(2.8)	75.3	(2.5)	88.8	(1.6)	81.1	(1.8)	77.3	(1.3)
Rural	59.8	(3.4)	68.5	(5.0)	83.7	(3.4)	83.6	(3.1)	74.0	(1.8)
SES										
Low	68.8	(4.1)	79.4	(5.3)	87.8	(4.2)	76.4	(3.4)	77.8	(2.5)
Middle	62.0	(3.1)	69.8	(3.8)	86.2	(2.6)	83.5	(2.9)	75.3	(1.4)
High (ref)	65.0	(4.1)	75.0	(2.9)	88.7	(1.7)	82.7	(2.4)	77.1	(2.0)
Cultural background										
English-speaking (ref)	61.4	(2.4)	72.8	(2.2)	85.8	(1.6)	82.5	(1.6)	75.4	(1.1)
European	73.1	(16.0)	77.1	(14.9)	100.0	(0.0)	72.8	(13.7)	78.5	(7.4)
Middle Eastern	**83.3**	**(6.8) a**	74.9	(9.8)	**97.3**	**(1.8) a**	79.7	(7.8)	84.2	(4.3)
Asian	**81.3**	**(4.8) a**	**88.4**	**(4.6) a**	100.0	(0.0)	72.6	(9.7)	**86.0**	**(2.5) a**
BMI category										
Thin	64.2	(9.0)	74.1	(7.5)	85.0	(6.3)	82.6	(6.2)	76.9	(3.5)
Healthy weight (ref)	63.9	(2.6)	72.0	(2.6)	86.7	(1.9)	82.2	(2.0)	75.4	(1.2)
Overweight	61.5	(6.4)	**82.6**	**(3.8) a**	90.6	(2.5)	83.2	(3.6)	**80.7**	**(2.1) a**
Obese	**88.2**	**(4.8) a**	73.2	(7.4)	91.7	(3.0)	71.0	(7.1)	81.6	(3.5)

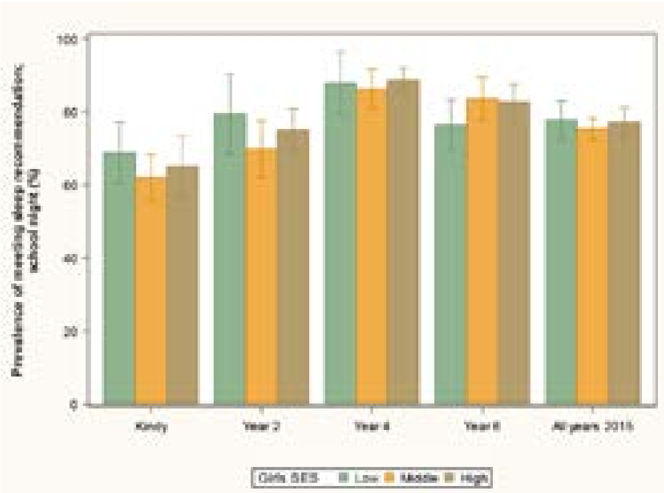
	2015				
	Year K	Year 2	Year 4	Year 6	All years
BOYS					
Locality					
Urban (ref)	63.2 (2.8)	77.0 (2.5)	87.7 (1.5)	80.6 (2.4)	76.4 (1.4)
Rural	60.5 (2.9)	80.0 (3.3)	86.0 (2.3)	89.4 (3.9)	79.2 (1.9)
SES					
Low	69.4 (3.7)	77.3 (3.6)	84.6 (3.4)	81.2 (5.0)	78.0 (1.9)
Middle	59.7 (3.8)	80.0 (3.4)	90.3 (1.7)	86.6 (2.5)	79.2 (2.0)
High (ref)	61.5 (3.7)	75.8 (3.5)	86.3 (1.7)	79.8 (3.1)	74.8 (1.9)
Cultural background					
English-speaking (ref)	61.7 (2.6)	76.7 (2.2)	87.0 (1.3)	83.5 (2.3)	76.7 (1.2)
European	82.4 (16.7)	71.9 (13.5)	88.3 (11.4)	76.5 (20.7)	77.9 (7.9)
Middle Eastern	55.7 (20.9)	74.6 (11.1)	90.4 (5.2)	**67.1 (9.4) a**	71.2 (4.1)
Asian	**77.1 (6.5) a**	**93.4 (3.9) a**	87.7 (5.6)	76.6 (8.5)	**83.5 (2.5) a**
BMI category					
Thin	64.5 (9.1)	81.1 (6.9)	78.6 (6.2)	89.9 (5.1)	77.2 (4.0)
Healthy weight (ref)	60.7 (2.5)	76.4 (2.5)	87.4 (1.5)	82.0 (2.8)	75.6 (1.5)
Overweight	70.5 (6.9)	74.7 (5.3)	88.3 (4.5)	83.1 (3.3)	80.6 (2.8)
Obese	66.4 (7.8)	**92.8 (4.7) a**	90.4 (4.7)	85.1 (5.1)	**84.2 (2.9) a**

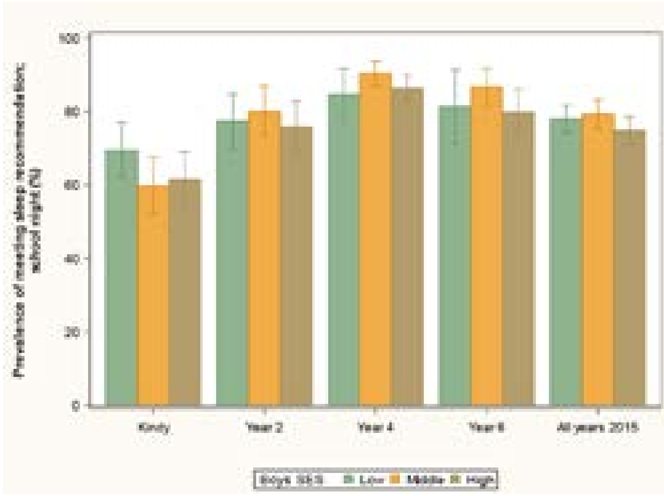
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

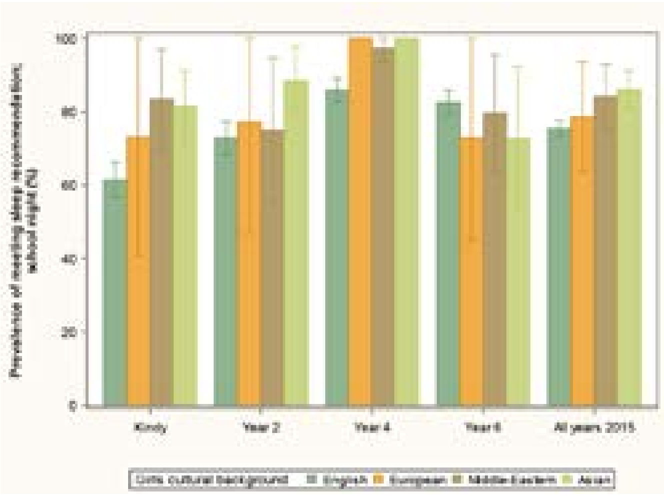
No letter means there was no statistical difference.

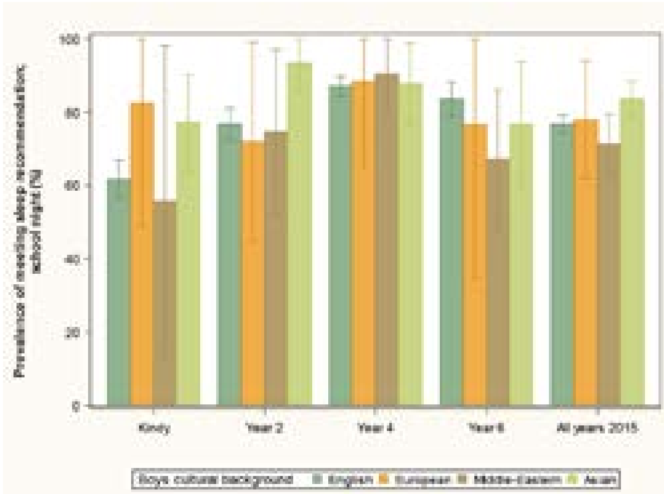
Figure 12.2 Prevalence of meeting the sleep recommendation on school nights in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

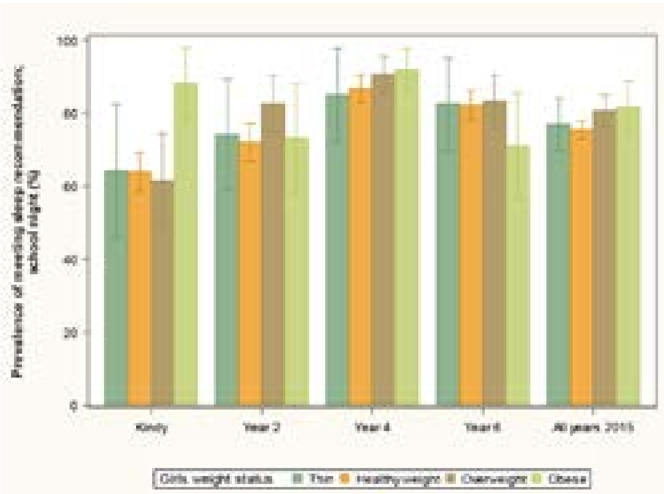


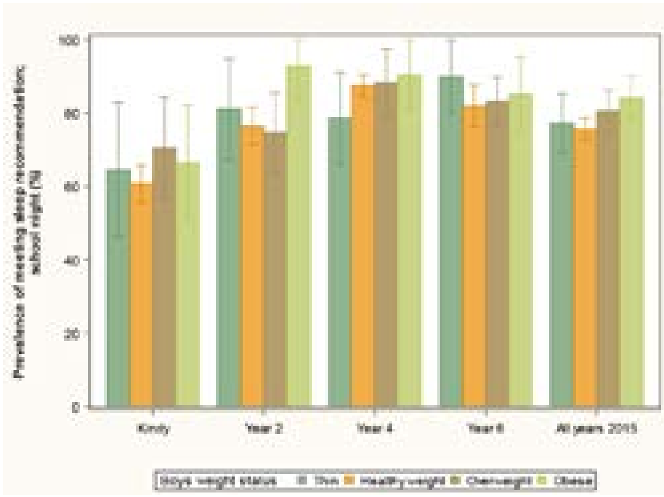

Prevalence of meeting sleep recommendation; school night (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls SES
Low
Middle
High


Prevalence of meeting sleep recommendation; school night (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys SES
Low
Middle
High


Prevalence of meeting sleep recommendation; school night (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting sleep recommendation; school night (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting sleep recommendation; school night (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of meeting sleep recommendation; school night (%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

BEDTIME, WAKE-UP TIME AND SLEEP DURATION ON NON-SCHOOL NIGHTS

Table 12.4 shows the average bedtime, wake-up time and the duration of sleep on non-school nights among children by sex and year group in 2015. Overall, children went to bed at approximately 9.12pm on non-school nights, and bedtime appeared to increase with age. On non-school days, children generally woke up at around 7.44am and this appeared to get later across year groups. On non-school nights, the mean sleep duration was approximately 10½ hours with children in Kindergarten sleeping for approximately 10¾ hours and Year 6 children approximately 10½ hours a night. Bedtime, wake-up and the duration of sleep appear to be broadly consistent between boys and girls within year groups; and with age, children appear to have later bedtimes and shorter sleep duration.

Table 12.4 Average (mean) bedtime, wake-up time and sleep duration on non-school nights among children in primary school by sex and year group in 2015 (time, SE)

	2015									
	Year K		Year 2		Year 4		Year 6		All years	
ALL										
Go to bed	20:42	(0:05)	20:59	(0:04)	21:18	(0:04)	21:56	(0:05)	21:12	(0:04)
Wake up	7:30	(0:04)	7:35	(0:03)	7:42	(0:04)	8:14	(0:04)	7:44	(0:03)
Sleep duration	10:48	(0:02)	10:37	(0:02)	10:24	(0:02)	10:18	(0:04)	10:32	(0:02)
GIRLS										
Go to bed	20:44	(0:05)	20:59	(0:04)	21:18	(0:04)	21:49	(0:04)	21:11	(0:04)
Wake up	7:36	(0:04)	7:39	(0:04)	7:49	(0:04)	8:26	(0:05)	7:51	(0:03)
Sleep duration	10:52	(0:03)	10:40	(0:03)	10:31	(0:02)	10:37	(0:04)	10:40	(0:02)
BOYS										
Go to bed	20:40	(0:05)	20:58	(0:04)	21:19	(0:04)	22:02	(0:06)	21:13	(0:04)
Wake up	7:24	(0:05)	7:32	(0:04)	7:36	(0:04)	8:01	(0:06)	7:38	(0:04)
Sleep duration	10:44	(0:02)	10:33	(0:03)	10:16	(0:02)	9:59	(0:06)	10:24	(0:02)

Note: No significance testing was conducted.

MEETING SLEEP RECOMMENDATION ON NON-SCHOOL NIGHTS

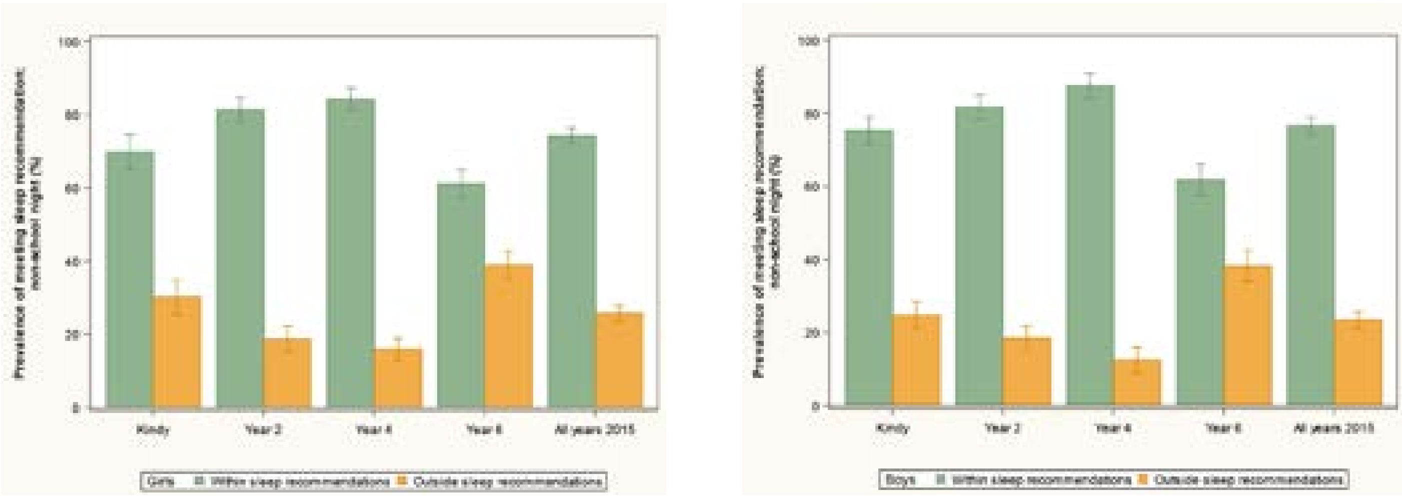
Table 12.5 and Figure 12.3 show the prevalence of meeting the sleep recommendation on non-school nights among children by sex and year group in 2015. Overall, 75% of children met the sleep recommendation on non-school nights and the prevalence appeared to be broadly consistent between boys and girls and within year groups

Table 12.5 Prevalence of meeting sleep recommendation on non-school nights among children in primary school by sex and year group in 2015 (%, SE)

	2015									
	Year K		Year 2		Year 4		Year 6		All years	
ALL										
Within sleep recommendations	72.6	(1.5)	81.5	(1.2)	85.8	(1.3)	61.4	(1.5)	75.4	(0.8)
Outside sleep recommendations	27.4	(1.5)	18.5	(1.2)	14.2	(1.3)	38.6	(1.5)	24.6	(0.8)
GIRLS										
Within sleep recommendations	69.9	(2.3)	81.3	(1.7)	84.2	(1.5)	61.1	(1.9)	74.3	(1.1)
Outside sleep recommendations	30.1	(2.3)	18.7	(1.7)	15.8	(1.5)	38.9	(1.9)	25.7	(1.1)
BOYS										
Within sleep recommendations	75.3	(1.8)	81.6	(1.7)	87.5	(1.7)	61.8	(2.1)	76.6	(1.1)
Outside sleep recommendations	24.7	(1.8)	18.4	(1.7)	12.5	(1.7)	38.2	(2.1)	23.4	(1.1)

a *Indicates statistically significant difference at P < 0.05 between sex and within year group.*
No letter means there was no statistical difference.

Figure 12.3 Prevalence of meeting the sleep recommendation on school nights in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that three in four (75%) of children in primary school met the sleep recommendation on non-school nights. Table 12.6 and Figure 12.4 show the prevalence of meeting the sleep recommendation on non-school nights among children by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of meeting the sleep recommendation on non-school nights between children from urban and rural areas.

Socio-economic status

2015: Overall, the prevalence of meeting the sleep recommendation on non-school nights was significantly lower among children from low SES backgrounds (71%), compared with children from high SES backgrounds (77%). The prevalence was significantly lower among boys from low SES backgrounds (71%), compared with boys from high SES backgrounds (79%).

Cultural background

2015: Overall, the prevalence of meeting the sleep recommendation on non-school nights was significantly higher among children from Asian cultural backgrounds (82%), compared with children from English speaking backgrounds (75%).

Weight status

2015: Overall, there were no significant differences in the prevalence of meeting the sleep recommendation on non-school nights between children from different BMI categories.

Table 12.6 Prevalence of meeting the sleep recommendation on non-school nights in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

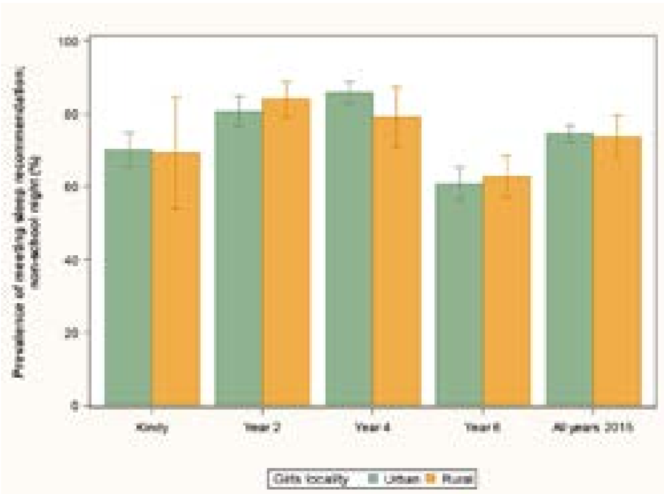
	2015									
	Year K		Year 2		Year 4		Year 6		All years	
ALL										
Locality										
Urban (ref)	72.5	(1.5)	81.3	(1.4)	86.8	(1.4)	60.8	(1.7)	75.5	(0.9)
Rural	72.9	(4.6)	82.0	(2.7)	82.6	(3.5)	63.5	(2.5)	75.2	(2.3)
SES										
Low	68.1	(4.1)	79.6	(2.0)	**78.3**	**(3.0) a**	56.9	(3.9)	**70.8**	**(1.9) a**
Middle	76.4	(2.4)	82.3	(2.0)	87.3	(2.2)	61.0	(2.3)	76.5	(1.5)
High (ref)	72.1	(2.0)	81.6	(1.7)	88.3	(1.5)	64.4	(2.2)	76.8	(1.2)
Cultural background										
English-speaking (ref)	71.6	(1.7)	81.3	(1.3)	86.1	(1.5)	61.8	(1.5)	75.3	(0.9)
European	72.0	(12.1)	84.2	(7.8)	82.9	(8.5)	50.5	(13.1)	72.7	(4.9)
Middle Eastern	71.5	(2.1)	81.1	(4.7)	82.7	(4.0)	53.0	(9.4)	72.9	(3.2)
Asian	82.6	(4.7)	83.3	(5.7)	85.5	(4.1)	70.6	(6.2)	**81.5**	**(2.7) a**
BMI category										
Thin	71.1	(5.1)	77.3	(5.4)	83.2	(4.2)	65.7	(5.9)	74.5	(2.8)
Healthy weight (ref)	72.6	(1.7)	81.9	(1.2)	86.8	(1.5)	61.5	(1.8)	75.7	(1.0)
Overweight	67.6	(4.4)	83.9	(2.8)	83.5	(2.7)	61.9	(2.9)	74.1	(1.7)
Obese	79.6	(4.4)	78.6	(5.4)	83.6	(3.2)	55.0	(6.8)	75.1	(2.2)
GIRLS										
Locality										
Urban (ref)	70.0	(2.3)	80.6	(2.0)	85.7	(1.5)	60.7	(2.3)	74.5	(1.1)
Rural	69.2	(7.5)	84.0	(2.4)	79.0	(4.1)	62.7	(2.9)	73.7	(2.9)
SES										
Low	66.5	(7.0)	78.7	(2.9)	**77.2**	**(3.5) a**	60.5	(4.8)	70.5	(2.9)
Middle	74.5	(3.0)	83.0	(2.4)	86.6	(2.7)	58.6	(3.9)	75.8	(1.9)
High (ref)	68.2	(3.4)	81.0	(2.7)	85.5	(2.0)	63.8	(2.1)	74.9	(1.7)
Cultural background										
English-speaking (ref)	67.3	(2.5)	81.2	(1.9)	84.6	(1.7)	61.4	(2.0)	73.7	(1.2)
European	55.6	(17.1)	85.4	(10.5)	89.7	(9.1)	47.2	(15.8)	66.9	(7.4)
Middle Eastern	80.1	(6.9)	81.0	(6.4)	82.5	(3.8)	57.2	(12.2)	76.2	(4.4)
Asian	**83.7**	**(4.9) a**	80.6	(5.7)	80.5	(5.7)	67.4	(11.2)	80.1	(3.4)
BMI category										
Thin	69.9	(8.1)	75.4	(6.9)	80.2	(6.3)	60.6	(6.8)	71.1	(4.0)
Healthy weight (ref)	69.8	(2.8)	80.8	(1.9)	84.9	(1.9)	60.6	(2.6)	74.0	(1.3)
Overweight	61.4	(6.0)	**87.7**	**(3.0) a**	81.0	(3.7)	64.8	(4.0)	74.6	(2.4)
Obese	**85.6**	**(5.0) a**	76.8	(8.0)	86.1	(5.0)	58.4	(8.1)	77.7	(3.4)

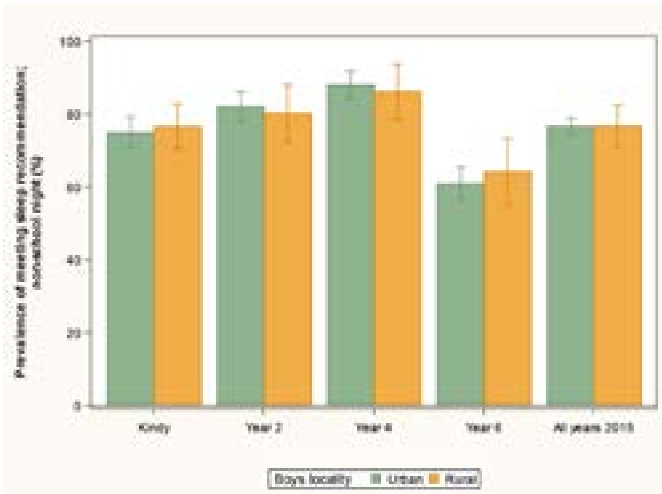
	2015				
	Year K	Year 2	Year 4	Year 6	All years
BOYS					
Locality					
Urban (ref)	75.0 (2.2)	82.0 (2.0)	88.0 (1.9)	61.0 (2.2)	76.6 (1.2)
Rural	76.5 (3.0)	80.2 (3.9)	86.1 (3.8)	64.1 (4.6)	76.7 (2.8)
SES					
Low	69.7 (3.2)	80.4 (3.5)	**79.3 (3.4) a**	**53.5 (4.6) a**	**71.0 (2.0) a**
Middle	78.4 (2.7)	81.6 (3.2)	88.1 (3.1)	63.2 (3.1)	77.3 (1.6)
High (ref)	75.9 (2.8)	82.4 (2.6)	91.3 (2.0)	65.0 (2.9)	78.9 (1.7)
Cultural background					
English-speaking (ref)	75.5 (2.0)	81.4 (1.8)	87.7 (1.9)	62.3 (2.1)	76.8 (1.2)
European	100.0 (0.0)	83.3 (10.5)	76.1 (14.6)	55.9 (20.5)	79.5 (5.1)
Middle Eastern	64.6 (6.6)	81.3 (8.1)	82.8 (10.3)	49.0 (8.6)	69.6 (5.1)
Asian	80.3 (8.9)	86.8 (7.8)	92.6 (5.0)	73.5 (8.5)	83.5 (4.2)
BMI category					
Thin	72.4 (8.1)	79.6 (8.5)	86.5 (4.9)	75.8 (8.1)	78.8 (4.0)
Healthy weight (ref)	75.4 (2.3)	83.0 (1.8)	88.7 (1.7)	62.4 (2.3)	77.4 (1.2)
Overweight	75.7 (6.4)	79.2 (4.0)	86.2 (3.7)	59.8 (4.0)	73.7 (2.2)
Obese	73.1 (8.0)	80.7 (6.6)	80.7 (5.7)	51.7 (8.3)	72.3 (3.1)

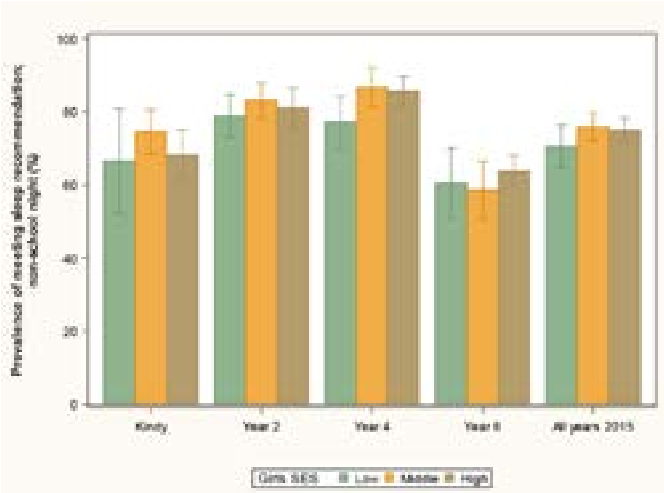
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

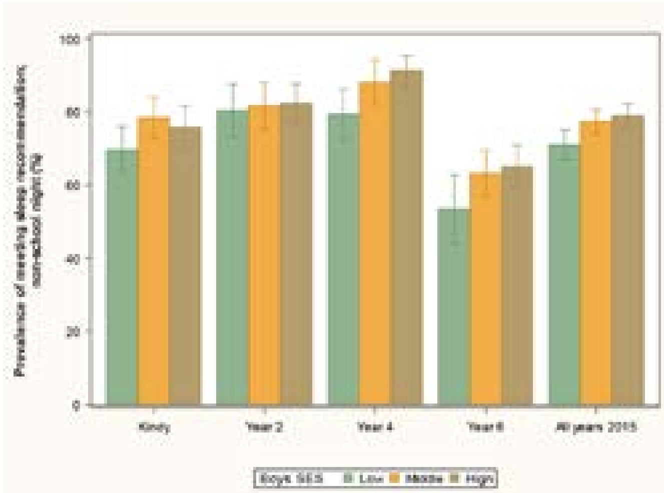
No letter means there was no statistical difference.

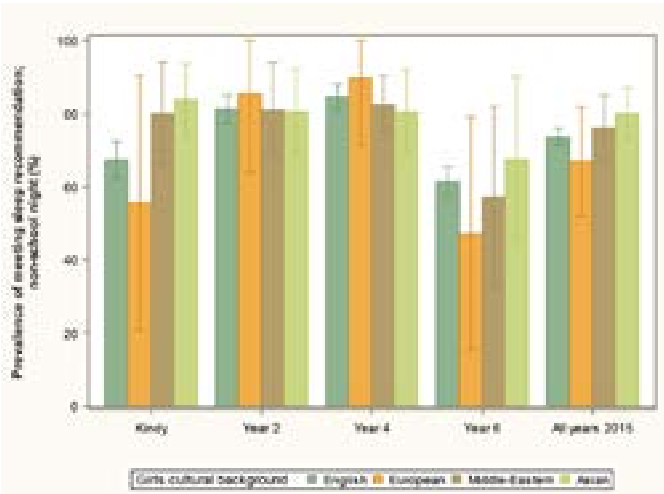
Figure 12.4 Prevalence of meeting the sleep recommendation on non-school nights in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

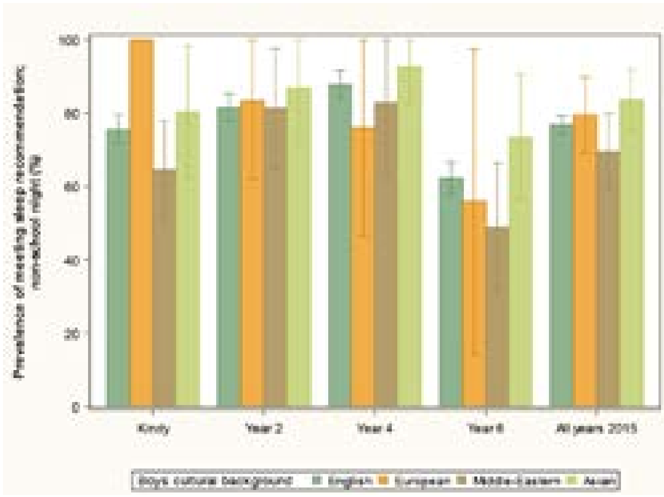


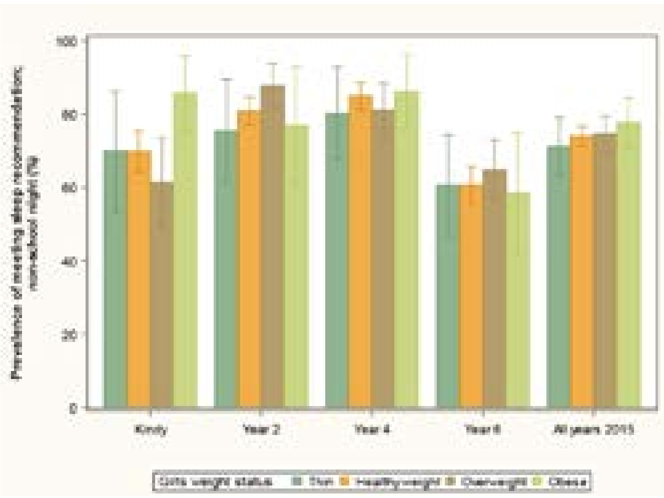


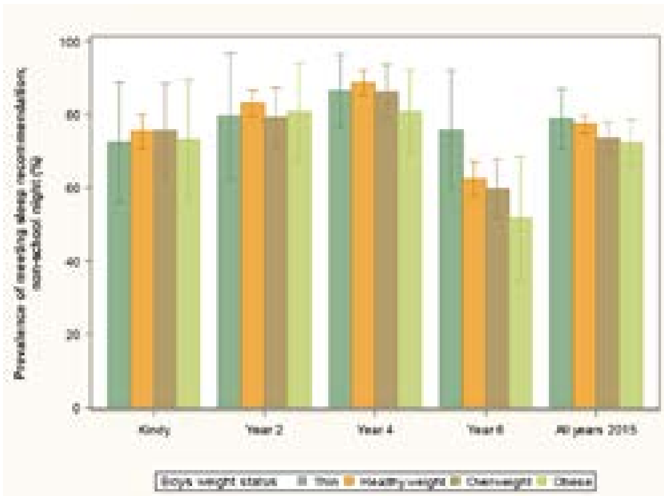

Prevalence of meeting sleep recommendation; non-school night (%)
0
20
40
60
80
100
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls SES
Low
Middle
High


Prevalence of meeting sleep recommendation; non-school night (%)
0
20
40
60
80
100
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys SES
Low
Middle
High


Prevalence of meeting sleep recommendation; non-school night (%)
0
20
40
60
80
100
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting sleep recommendation; non-school night (%)
0
20
40
60
80
100
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of meeting sleep recommendation; non-school night (%)
0
20
40
60
80
100
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthy-weight
Overweight
Obese


Prevalence of meeting sleep recommendation; non-school night (%)
0
20
40
60
80
100
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys weight status
Thin
Healthy-weight
Overweight
Obese

USE OF ELECTRONIC MEDIA DURING SLEEP TIME

Children's sleep duration appears to have decreased over time with many children sleeping less than previous generations of children.[30] The use of electronic media (e.g., televisions, computers, smart phones, tablets) around bedtime is negatively associated with sleep and may potentially influence the duration of sleep in the current generation of children.[31] Possible mechanisms for the influence of electronic media on children's sleep include: media use directly displacing sleep or other activities such as physical activity, which are associated with good sleep hygiene; and media use in the evenings, which may increase physiological arousal causing difficulties relaxing prior to bedtime.[31]

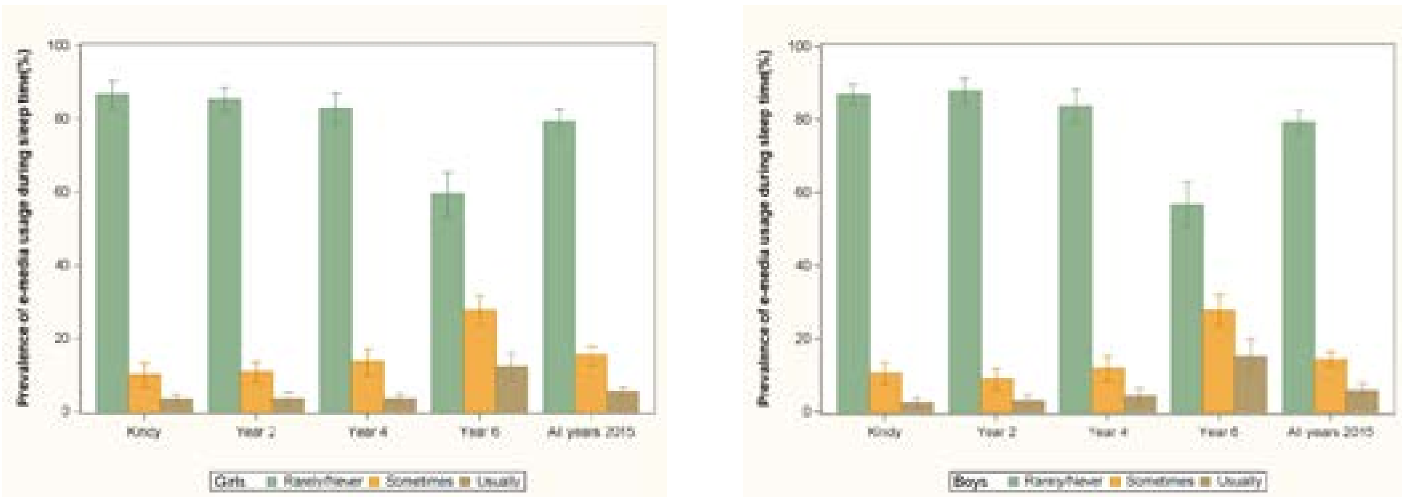
Table 12.7 and Figure 12.5 show the prevalence of using electronic media during sleep time among children by sex and year group in 2015. Overall 79% of children never or rarely used electronic media during sleep time. The prevalence appeared to be broadly consistent between boys and girls within year groups and the prevalence of never or rarely using electronic media during sleep time appeared to decrease with age.

Table 12.7 Prevalence of using electronic media during sleep time among children in primary school by sex and year group in 2015 (%, SE)

	2015									
	Year K		Year 2		Year 4		Year 6		All years	
ALL										
Rarely/Never	86.8	(1.4)	86.6	(1.4)	83.3	(1.8)	58.2	(2.5)	79.2	(1.5)
Sometimes	10.3	(1.2)	10.0	(1.1)	12.9	(1.4)	27.9	(1.6)	15.0	(1.0)
Usually	2.9	(0.4)	3.3	(0.6)	3.9	(0.7)	13.9	(1.7)	5.8	(0.7)
GIRLS										
Rarely/Never	86.7	(1.9)	85.5	(1.6)	82.8	(2.1)	59.5	(2.9)	79.2	(1.7)
Sometimes	10.1	(1.6)	10.9	(1.3)	13.7	(1.7)	27.9	(2.0)	15.3	(1.2)
Usually	3.3	(0.7)	3.5	(0.9)	3.5	(0.8)	12.5	(1.8)	5.5	(0.6)
BOYS										
Rarely/Never	87.0	(1.4)	87.9	(1.7)	83.8	(2.3)	56.8	(3.0)	79.3	(1.6)
Sometimes	10.6	(1.4)	9.0	(1.4)	12.0	(1.7)	27.9	(2.1)	14.6	(1.0)
Usually	2.5	(0.6)	3.1	(0.8)	4.2	(1.2)	15.3	(2.3)	6.1	(0.9)

Note: No significance testing was conducted.

Figure 12.5 Prevalence of using electronic media during sleep time among children in primary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 6% of children in primary school usually used electronic media during sleep time. Table 12.8 and Figure 12.6 show the prevalence of usually using electronic media during sleep time, among children by sex, year group, socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of usually using electronic media during sleep time between children from urban and rural areas.

Socio-economic status

2015: Overall, the prevalence of usually using electronic media during sleep time was significantly higher among children from low SES backgrounds (10%), compared with children from high SES backgrounds (5%). The prevalence was significantly higher among girls and boys from low SES (both 10%), compared with girls and boys from high SES backgrounds (both 5%).

Cultural background

2015: Overall, the prevalence of usually using electronic media during sleep time was significantly higher among children from Middle Eastern (16%) and from Asian (10%) cultural backgrounds, compared with children from English-speaking backgrounds (5%). The prevalence was significantly higher among girls from Middle Eastern (14%) and from Asian (12%) cultural backgrounds, compared with girls from English-speaking (5%) backgrounds; and among boys from Middle Eastern (19%) cultural backgrounds, compared with boys from English-speaking (6%) backgrounds.

Weight status

2015: Overall, the prevalence of usually using electronic media during sleep time was significantly higher among children in the overweight (7%) and obese (12%) BMI categories, compared with children in the healthy weight BMI category (5%). The prevalence was significantly higher among girls in the obese BMI category (11%), compared with girls in the healthy BMI category (5%). Similarly, the prevalence was significantly higher among boys in the overweight (9%) and obese (12%) BMI categories, compared with boys in the healthy BMI category (5%).

Table 12.8 Prevalence of usually using electronic media during sleep time in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

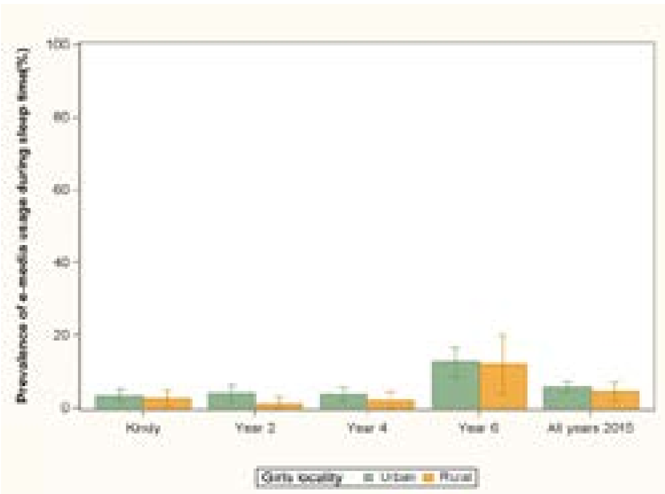
	2015									
	Year K		Year 2		Year 4		Year 6		All years	
ALL										
Locality										
Urban (ref)	3.2	(0.5)	3.9	(0.8)	4.1	(0.9)	14.8	(2.1)	6.2	(0.8)
Rural	1.8	(0.6)	1.1	(0.9)	3.1	(0.9)	11.3	(2.2)	4.4	(0.6)
SES										
Low	**4.4**	**(0.7) a**	4.8	(2.1)	**6.5**	**(2.1) a**	**25.7**	**(3.8) a**	**10.0**	**(1.6) a**
Middle	2.5	(1.0)	3.8	(1.2)	4.1	(0.9)	9.0	(1.2)	4.9	(0.6)
High (ref)	2.4	(0.6)	2.3	(0.6)	2.3	(0.7)	12.4	(1.9)	4.5	(0.7)
Cultural background										
English-speaking (ref)	2.1	(0.4)	2.4	(0.6)	3.0	(0.6)	13.0	(1.4)	5.0	(0.5)
European	na		na		na		20.5	(9.5)	5.1	(2.5)
Middle Eastern	3.0	(1.8)	**15.1**	**(5.3) a**	**15.1**	**(4.4) a**	**37.2**	**(4.9) a**	**16.4**	**(1.7) a**
Asian	**10.6**	**(2.5) a**	**8.0**	**(2.7) a**	**8.8**	**(2.7) a**	12.9	(6.3)	**9.9**	**(1.7) a**
BMI category										
Thin	**6.3**	**(2.6) a**	2.9	(1.7)	na		8.6	(3.1)	4.5	(1.3)
Healthy weight (ref)	2.7	(0.5)	3.1	(0.7)	3.8	(0.7)	11.8	(1.6)	5.1	(0.6)
Overweight	3.6	(1.7)	2.0	(1.0)	4.3	(1.7)	**16.5**	**(2.8) a**	**7.3**	**(1.2) a**
Obese	na		**8.0**	**(3.5) a**	6.5	(2.8)	**35.2**	**(6.5) a**	**11.5**	**(2.7) a**
GIRLS										
Locality										
Urban (ref)	3.4	(0.9)	4.1	(1.1)	3.9	(0.9)	12.7	(2.0)	5.8	(0.7)
Rural	2.8	(1.1)	1.1	(1.0)	2.2	(1.2)	12.1	(3.9)	4.5	(1.2)
SES										
Low	**5.9**	**(1.1) a**	4.7	(2.4)	3.0	(1.3)	**27.8**	**(3.3) a**	**10.0**	**(1.2) a**
Middle	2.8	(1.6)	4.3	(2.0)	4.4	(1.4)	**5.3**	**(1.4) a**	4.2	(0.9)
High (ref)	2.4	(0.9)	2.6	(0.8)	2.9	(1.1)	11.5	(1.8)	4.5	(0.6)
Cultural background										
English-speaking (ref)	1.8	(0.6)	2.9	(0.9)	2.6	(0.7)	11.1	(1.6)	4.5	(0.5)
European	na		na		na		**33.1**	**(14.0) a**	9.5	(4.7)
Middle Eastern	na		**11.4**	**(4.9) a**	**14.0**	**(6.0) a**	**34.0**	**(4.1) a**	**14.1**	**(1.4) a**
Asian	**15.8**	**(3.3) a**	7.9	(3.7)	**8.7**	**(3.9) a**	12.9	(7.3)	**12.0**	**(2.1) a**
BMI category										
Thin	2.6	(2.5)	3.7	(2.8)	na		8.8	(3.9)	4.1	(1.7)
Healthy weight (ref)	3.5	(0.9)	3.4	(1.0)	4.2	(1.1)	9.9	(1.6)	5.1	(0.6)
Overweight	3.1	(2.2)	1.5	(1.1)	2.7	(1.5)	**16.9**	**(3.9) a**	6.1	(1.3)
Obese	na		10.2	(5.8)	2.6	(1.8)	**36.4**	**(9.0) a**	**10.6**	**(2.9) a**

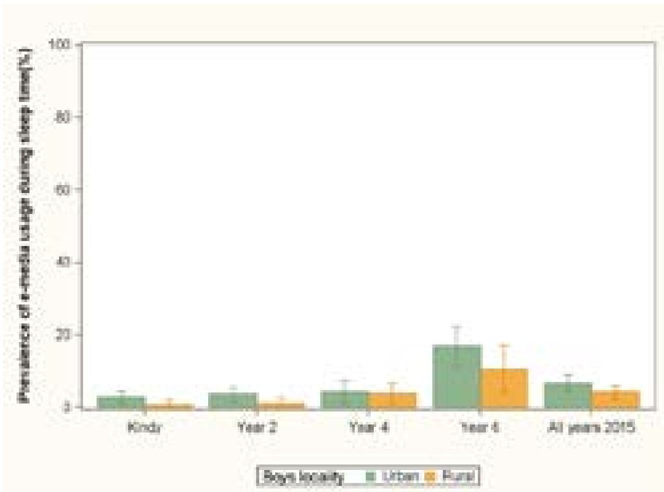
	2015				
	Year K	Year 2	Year 4	Year 6	All years
BOYS					
Locality					
Urban (ref)	2.9 (0.7)	3.7 (1.0)	4.3 (1.5)	16.9 (2.8)	6.7 (1.1)
Rural	0.8 (0.7)	1.2 (0.8)	3.9 (1.4)	10.5 (3.3)	4.2 (0.9)
SES					
Low	2.9 (1.3)	4.9 (2.2)	**9.8 (3.3) a**	23.8 (6.0)	**10.0 (2.3) a**
Middle	2.1 (1.1)	3.3 (1.3)	**3.8 (0.9) a**	12.5 (2.2)	5.6 (0.9)
High (ref)	2.5 (0.8)	1.9 (0.8)	1.7 (0.8)	13.5 (3.3)	4.5 (1.1)
Cultural background					
English-speaking (ref)	2.3 (0.6)	1.9 (0.7)	3.5 (0.9)	14.8 (2.2)	5.5 (0.8)
European	na	na	na	na	na
Middle Eastern	5.6 (3.0)	**19.0 (7.3) a**	**16.4 (7.1) a**	**40.6 (10.7) a**	**18.8 (2.6) a**
Asian	na	**8.2 (5.4) a**	**9.0 (4.6) a**	12.8 (6.3)	6.9 (2.3)
BMI category					
Thin	**10.1 (4.6) a**	1.9 (1.9)	na	8.2 (4.6)	5.0 (1.9)
Healthy weight (ref)	1.9 (0.6)	2.8 (0.8)	3.4 (0.8)	13.7 (2.2)	5.2 (0.7)
Overweight	4.1 (2.8)	2.6 (1.5)	6.1 (3.0)	16.2 (3.5)	**8.5 (1.7) a**
Obese	na	5.6 (3.0)	**10.8 (5.6) a**	**34.2 (7.9) a**	**12.4 (4.0) a**

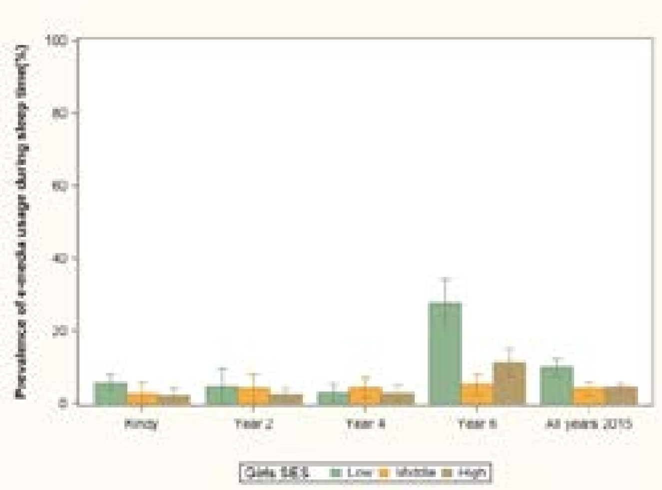
a Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.

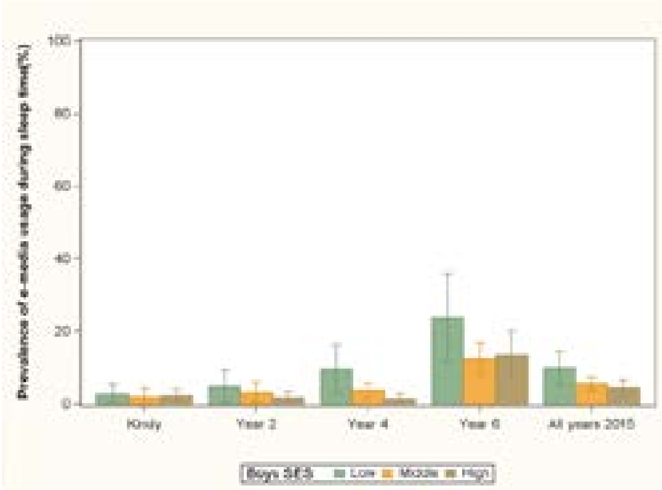
No letter means there was no statistical difference; 'na' data not available.

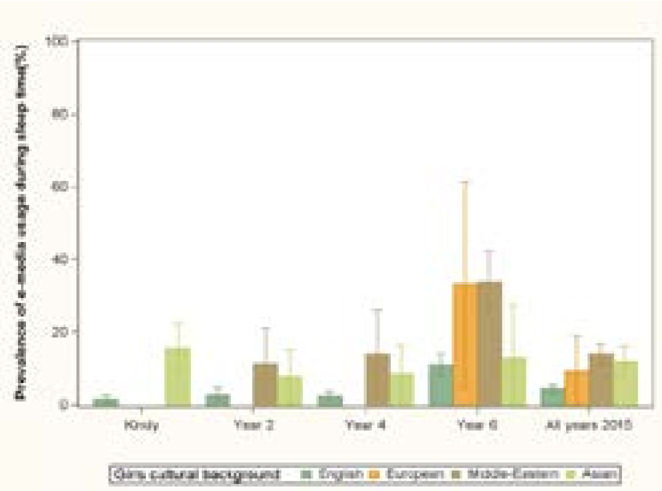
Figure 12.6 Prevalence usually using electronic media during sleep time in primary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

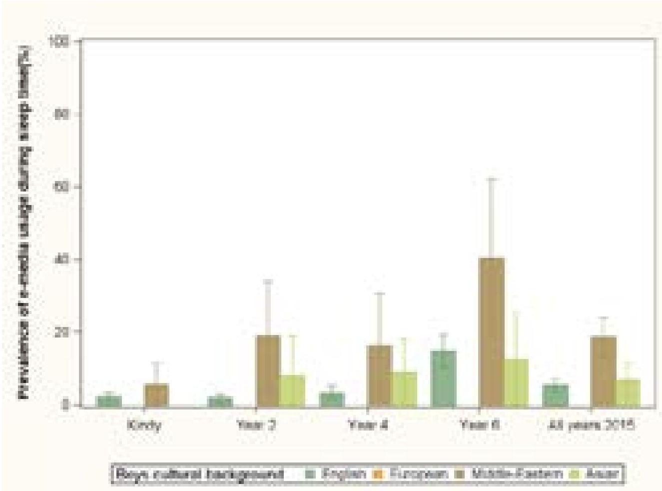


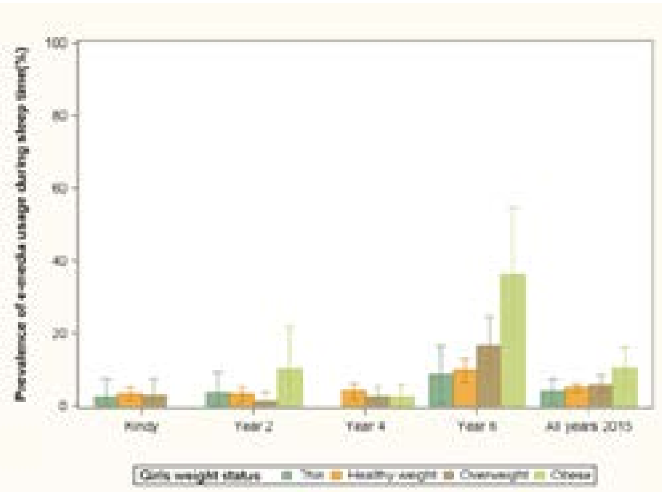


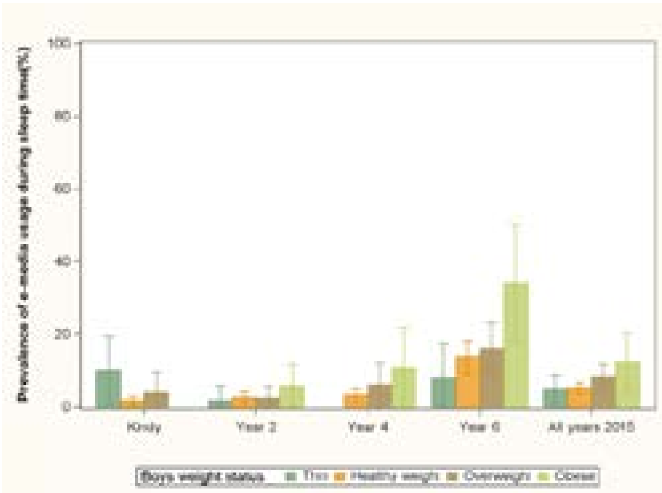

Prevalence of e-media usage during sleep time(%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls SES
Low
Middle
High


Prevalence of e-media usage during sleep time(%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys SES
Low
Middle
High


Prevalence of e-media usage during sleep time(%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls cultural background
English
European
Middle-Eastern
Asian


Prevalence of e-media usage during sleep time(%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys cultural background
English
European
Middle-Eastern
Asian


Prevalence of e-media usage during sleep time(%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Girls weight status
Thin
Healthy weight
Overweight
Obese


Prevalence of e-media usage during sleep time(%)
Kindy
Year 2
Year 4
Year 6
All years 2015
Boys weight status
Thin
Healthy weight
Overweight
Obese

SUMMARY OF THE SLEEPING HABITS OF CHILDREN IN PRIMARY SCHOOL

The table below summarises the indicators of sleep hygiene habits in children in primary school

Sleep indicator	Guidelines	SPANS cut point	Time, duration or prevalence 2010	Time, duration or prevalence 2015	Significant subgroup findings for 2015*
SCHOOL NIGHTS					
Bedtime	There are no specific guidelines	None	Not collected in 2010	8.24pm	**2015:** Subgroup differences were not assessed
Wake-up time	There are no specific guidelines	None		7am	**2015:** Subgroup differences were not assessed
Sleep duration	For healthy children with normal sleep, the recommendations are that primary school age children sleep between 9 and 11 hours[24]	Between 9.0 and 11.0 hours/night		10 hours 36 mins	**2015:** Subgroup differences were not assessed
Meet sleep recommendation				76.8%	**2015:** Overall, the proportion of children meeting the sleep recommendation on a school night was significantly higher among children from Asian cultural backgrounds and in the overweight and obese BMI categories
NON-SCHOOL NIGHTS					
Bedtime	There are no specific guidelines	None	Not collected in 2010	9.12pm	**2015:** Subgroup differences were not assessed
Wake-up time	There are no specific guidelines	None		7.44am	**2015:** Subgroup differences were not assessed
Sleep duration	For healthy children with normal sleep, the recommendations are that school age children sleep between 9 and 11 hours[24]	Between 9.0 and 11.0 hours/night		10 hours 32 mins	2015: Subgroup differences were not assessed
Meet sleep recommendation				75.4%	**2015:** Overall, the proportion of children meeting the sleep recommendation on a non-school night was significantly was lower among children from low SES backgrounds and significantly higher among children from Asian cultural backgrounds
SLEEP RISK FACTOR					
Using electronic media during sleep time	There are no specific guidelines	'Usually'	Not collected in 2010	5.8%	**2015:** Overall, the proportion of children that usually used electronic media during sleep time was significantly higher among children from low SES backgrounds, from Middle Eastern and Asian cultural backgrounds; and in the overweight and obese BMI categories

* *Comparisons are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight, and obese compared with healthy weight BMI category.*

SECONDARY SCHOOL

For healthy adolescents with normal sleep, the recommendations are that adolescents sleep between 8 and 10 hours.[24] For reporting purposes, we categorised adolescents' sleep time as *Within recommended sleep time = 8.0 to 10.0 hours a night and < 8.0 and those reporting > 10.0 as Outside recommended sleep time* for both school and non-school nights. The following section describes the sleep patterns of adolescents in Years 8 and 10 in secondary schools participating in SPANS. The findings are based on self-report responses of the adolescents. The prevalence estimates (%) need to be interpreted along with their standard errors (SE); a large standard error means a less precise estimate.

BEDTIME, WAKE-UP TIME AND SLEEP DURATION ON SCHOOL NIGHTS

There are no specific bedtime or wake-up time recommendations for adolescents, yet many adolescents have insufficient sleep (i.e., less than 8 hours) especially on school nights.[32] Adolescents who go to bed after midnight or who have no parent-set bedtimes were more likely to suffer from depression and report recent suicidal ideation than adolescents with parent-set bedtimes before 10 pm.[33] Although adolescents are unable to control their school start time, those who have parent-set bedtimes on school nights tend to report earlier bedtimes, have more sleep, are less fatigued and have less trouble staying awake.[33, 34]

Adolescents reported the time they usually go to bed and wake up and sleep duration is calcuated as the elapsed time between bedtime and wake-up. It is important to note that sleep onset latency (i.e., the time it takes to transition between full wakefulness and sleep), or time in disturbed sleep, cannot be determined from these questions.

Table 12.9 shows the average bedtime, wake-up time and duration of sleep on school nights among adolescents by sex and year group in 2015. Overall, adolescents go to bed at approximately 10pm on a school night, and bedtime appeared to increase with age. On school days, adolescents generally wake up at 6.50am and this appeared to be consistent across year groups. On a school night, the mean sleep duration was approximately 8¾ hours with adolescents in Year 8 sleeping for approximately 37 minutes a night more than Year 10 adolescents. Bedtime, wake-up, and sleep duration appear to be broadly consistent between boys and girls within year groups, but with increasing age, adolescents report later bedtimes and shorter sleep duration.

Table 12.9 Average (mean) bedtime, wake-up time and sleep duration on school nights among adolescents in secondary school by sex and year group in 2015 (time, SE)

	2015					
	Year 8		Year 10		All years	
ALL						
Go to bed	21:39	(0:03)	22:23	(0:04)	22:01	(0:03)
Wake up	6:50	(0:02)	6:49	(0:02)	6:50	(0:02)
Sleep duration	9:11	(0:03)	8:26	(0:04)	8:48	(0:03)
GIRLS						
Go to bed	21:42	(0:04)	22:24	(0:05)	22:03	(0:04)
Wake up	6:48	(0:02)	6:44	(0:03)	6:46	(0:03)
Sleep duration	9:05	(0:04)	8:21	(0:06)	8:42	(0:04)
BOYS						
Go to bed	21:35	(0:04)	22:23	(0:05)	21:59	(0:04)
Wake up	6:53	(0:04)	6:54	(0:03)	6:53	(0:03)
Sleep duration	9:18	(0:04)	8:31	(0:05)	8:54	(0:04)

Note: No significance testing was conducted.

MEETING SLEEP RECOMMENDATION ON SCHOOL NIGHTS

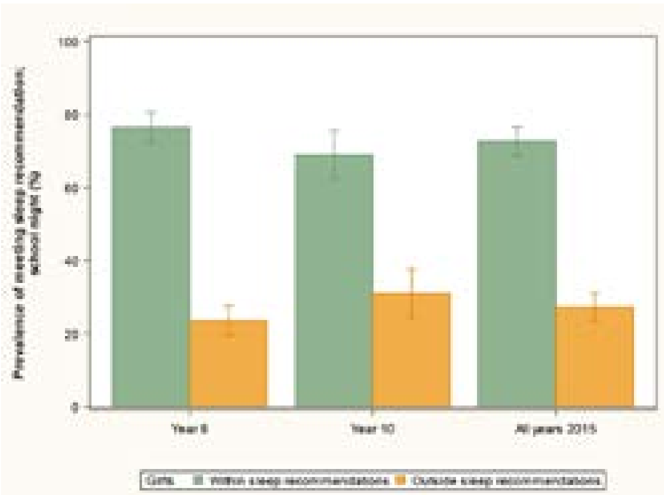
Table 12.10 and Figure 12.7 show the prevalence of meeting the sleep recommendation on school nights among adolescents in secondary school in 2015, by sex and year group. Overall, 75% of adolescents met the sleep recommendation on a school day. The prevalence appeared to be broadly consistent between boys and girls within year groups and appeared to decrease with age.

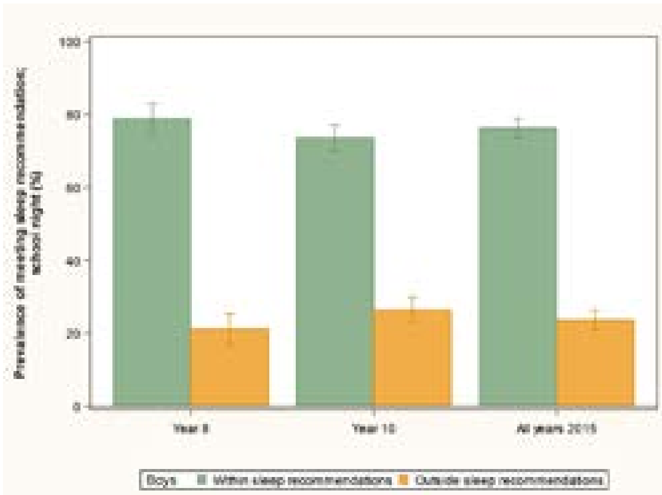
Table 12.10 Prevalence of meeting sleep recommendation on school nights among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015					
	Year 8		Year 10		All years	
ALL						
Within sleep recommendations	77.7	(1.5)	71.3	(2.0)	74.5	(1.1)
Outside sleep recommendations	22.3	(1.5)	28.7	(2.0)	25.5	(1.1)
GIRLS						
Within sleep recommendations	76.5	(2.0)	68.9	(3.3)	72.7	(1.9)
Outside sleep recommendations	23.5	(2.0)	31.1	(3.3)	27.3	(1.9)
BOYS						
Within sleep recommendations	78.8	(2.1)	73.6	(1.8)	76.3	(1.3)
Outside sleep recommendations	21.2	(2.1)	26.4	(1.8)	23.7	(1.3)

a Indicates statistically significant difference at P < 0.05 between sex and within year group.
No letter means there was no statistical difference.

Figure 12.7 Prevalence of meeting sleep recommendation on school nights among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that 75% of adolescents met the sleep recommendation on school nights. Table 12.11 and Figure 12.8 show the prevalence of meeting the sleep recommendation on school nights among adolescents by sex, year group, socio-demographic characteristics and BMI category in 2015

Locality

2015: Overall, there were no significant differences in the prevalence of meeting the sleep recommendation on school nights between adolescents living in rural and urban areas.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of meeting the sleep recommendation on school nights between adolescents from different SES backgrounds.

Cultural background

2015: Overall, there were no significant differences in the prevalence of meeting the sleep recommendation on school nights between adolescents from different cultural backgrounds.

Weight status

2015: Overall, there were no significant differences in the prevalence of meeting the sleep recommendation on school nights between adolescents from different BMI categories.

Table 12.11 Prevalence of meeting the sleep recommendation on school nights among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE))

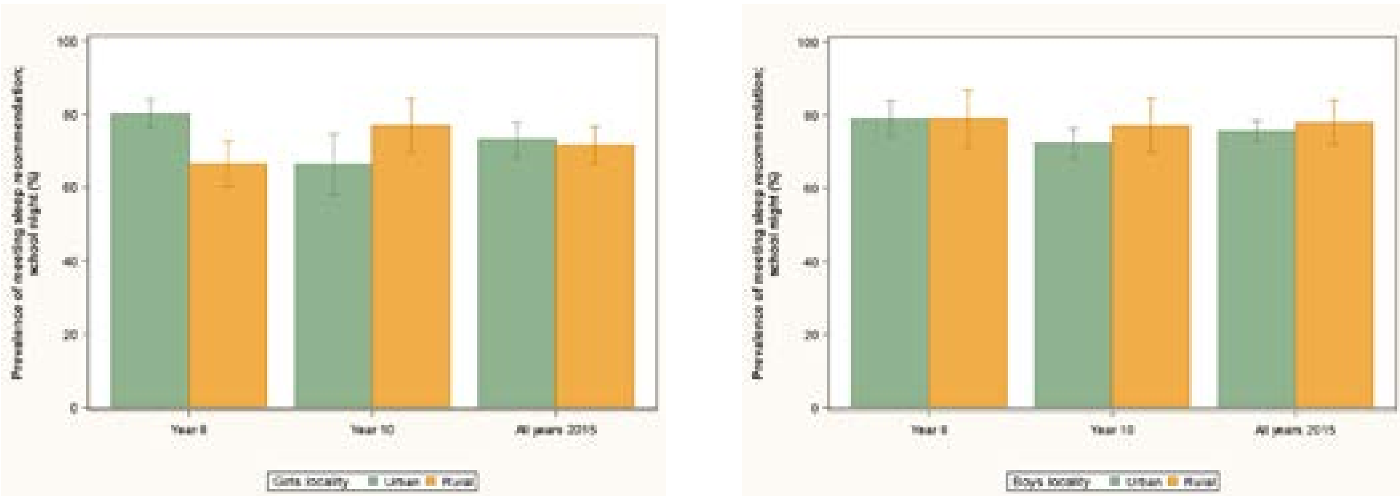
	2015					
	Year 8		Year 10		All years	
ALL						
Locality						
Urban (ref)	79.5	(1.6)	69.2	(2.4)	74.3	(1.4)
Rural	**73.0**	**(2.5) a**	**76.9**	**(2.7) a**	75.0	(2.0)
SES						
Low	78.2	(2.6)	72.0	(2.2)	75.0	(1.6)
Middle	75.0	(2.3)	72.8	(2.3)	73.9	(1.7)
High (ref)	79.7	(2.4)	69.0	(4.6)	74.5	(2.4)
Cultural background						
English-speaking (ref)	76.7	(1.6)	71.8	(2.1)	74.2	(1.2)
European	70.4	(10.3)	78.8	(12.5)	74.7	(8.7)
Middle Eastern	88.9	(5.0)	70.6	(9.6)	80.0	(5.7)
Asian	**87.8**	**(3.5) a**	69.8	(4.9)	77.2	(3.3)
BMI category						
Thin	75.5	(5.3)	77.3	(5.6)	76.3	(4.1)
Healthy weight (ref)	77.2	(1.8)	71.3	(2.0)	74.2	(1.3)
Overweight	79.6	(2.8)	70.6	(5.2)	75.2	(2.9)
Obese	78.4	(4.9)	67.0	(7.2)	72.7	(4.5)
GIRLS						
Locality						
Urban (ref)	80.1	(2.0)	66.3	(4.1)	73.1	(2.4)
Rural	**66.4**	**(3.0) a**	76.8	(3.7)	71.5	(2.5)
SES						
Low	**71.3**	**(3.9) a**	69.7	(3.9)	70.5	(2.9)
Middle	**75.8**	**(2.6) a**	71.0	(3.8)	73.3	(2.2)
High (ref)	82.3	(2.3)	66.3	(7.7)	74.3	(4.2)
Cultural background						
English-speaking (ref)	75.8	(2.2)	70.5	(3.4)	73.2	(2.0)
European	69.9	(10.2)	87.0	(12.7)	76.0	(8.6)
Middle Eastern	83.3	(5.6)	56.3	(15.6)	71.2	(7.2)
Asian	84.9	(5.0)	62.6	(6.1)	71.5	(3.7)
BMI category						
Thin	76.0	(6.1)	86.3	(6.7)	80.2	(4.9)
Healthy weight (ref)	76.0	(2.8)	68.7	(3.1)	72.2	(2.2)
Overweight	79.5	(3.7)	67.3	(8.8)	73.2	(4.9)
Obese	73.4	(7.8)	65.2	(11.1)	69.6	(6.5)

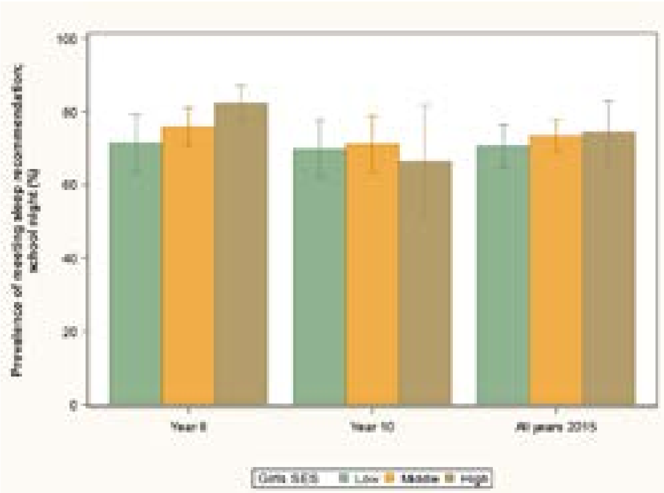
	2015		
	Year K	Year 2	All years
BOYS			
Locality			
Urban (ref)	78.8 (2.4)	72.2 (2.0)	75.6 (1.4)
Rural	78.9 (3.9)	77.1 (3.7)	77.9 (3.0)
SES			
Low	85.4 (3.0)	74.1 (2.4)	79.4 (1.7)
Middle	74.3 (3.1)	74.5 (3.8)	74.4 (2.9)
High (ref)	77.1 (3.7)	72.1 (3.6)	74.7 (2.0)
Cultural background			
English-speaking (ref)	77.4 (2.3)	73.0 (2.3)	75.3 (1.5)
European	72.1 (23.3)	73.5 (19.3)	73.1 (16.0)
Middle Eastern	**93.5 (4.6) a**	80.0 (13.0)	86.6 (7.4)
Asian	92.0 (5.8)	80.7 (6.9)	85.5 (4.4)
BMI category			
Thin	75.0 (9.4)	69.9 (7.8)	72.6 (5.9)
Healthy weight (ref)	78.4 (2.3)	74.1 (2.4)	76.3 (1.6)
Overweight	79.7 (4.4)	74.0 (4.5)	77.0 (3.1)
Obese	84.5 (6.3)	68.7 (10.3)	76.1 (6.0)

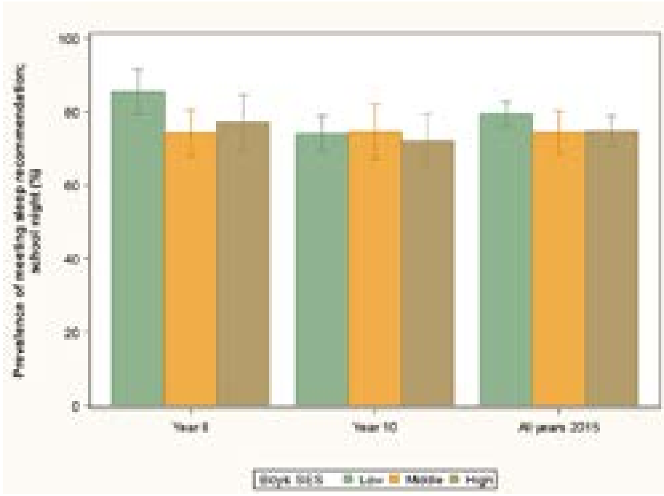
a *Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

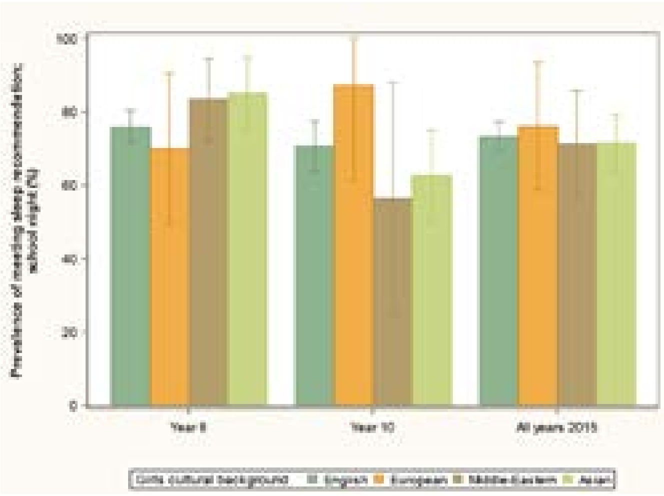
No letter means there was no statistical difference.

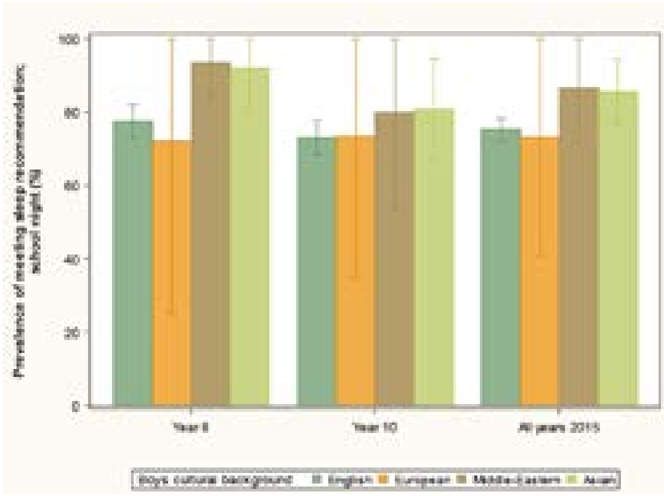
Figure 12.8 Prevalence of meeting the sleep recommendation on school nights among adolescents in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

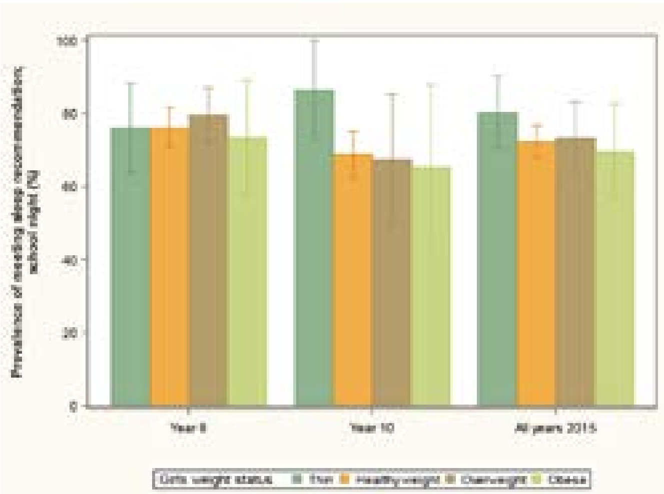


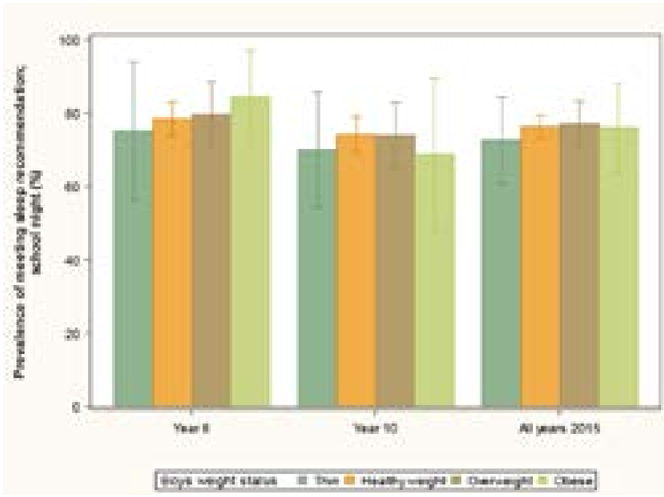

Prevalence of meeting sleep recommendation; school night (%)
Year 8
Year 10
All years 2015
Girls SES Low Middle High


Prevalence of meeting sleep recommendation; school night (%)
Year 8
Year 10
All years 2015
Boys SES Low Middle High


Prevalence of meeting sleep recommendation; school night (%)
Year 8
Year 10
All years 2015
Girls cultural background English European Middle-Eastern Asian


Prevalence of meeting sleep recommendation; school night (%)
Year 8
Year 10
All years 2015
Boys cultural background English European Middle-Eastern Asian


Prevalence of meeting sleep recommendation; school night (%)
Year 8
Year 10
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Prevalence of meeting sleep recommendation; school night (%)
Year 8
Year 10
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

BEDTIME, WAKE-UP TIME AND SLEEP DURATION ON NON-SCHOOL NIGHTS

Table 12.12 shows the average bedtime, wake-up and duration of sleep on non-school nights among adolescents by sex and year group in 2015. Overall, adolescents went to bed at approximately 11.16pm on non-school nights, and the time appeared to get later with age. On non-school days, adolescents generally awoke at around 9am. On non-school nights the mean sleep duration was 9¾ hours, and this appeared to decrease with age.

Overall, the times that adolescents went to bed, woke up and the duration of sleep appeared to be broadly consistent between boys and girls. With increasing age adolescents, girls in particular, appear to have later bedtimes and shorter sleep duration.

Table 12.12 Average (mean) bedtime, wake-up time and sleep duration on non-school nights among adolescents in secondary school by sex and year group in 2015 (time, SE)

	2015					
	Year 8		Year 10		All years	
ALL						
Go to bed	22:57	(0:05)	23:36	(0:05)	23:16	(0:04)
Wake up	8:52	(0:05)	9:10	(0:06)	9:01	(0:04)
Sleep duration	9:56	(0:04)	9:34	(0:05)	9:45	(0:03)
GIRLS						
Go to bed	22:56	(0:07)	23:33	(0:08)	23:14	(0:06)
Wake up	9:08	(0:06)	9:07	(0:07)	9:07	(0:06)
Sleep duration	10:12	(0:05)	9:35	(0:07)	9:53	(0:04)
BOYS						
Go to bed	22:58	(0:07)	23:39	(0:06)	23:18	(0:06)
Wake up	8:37	(0:08)	9:12	(0:08)	8:55	(0:06)
Sleep duration	9:40	(0:06)	9:33	(0:07)	9:37	(0:04)

Note: No significance testing was conducted.

MEETING SLEEP RECOMMENDATION ON NON-SCHOOL NIGHTS

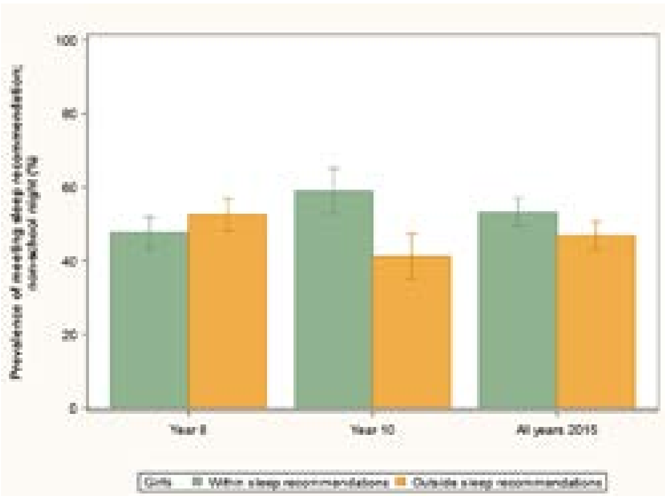
Table 12.13 and Figure 12.9 show the prevalence of meeting the sleep recommendation on non-school nights among adolescents by sex and year group in 2015. Overall, 55% of adolescents met the sleep recommendation on non-school nights. The prevalence of meeting the sleep recommendation appeared to be broadly consistent between boys and girls within year groups.

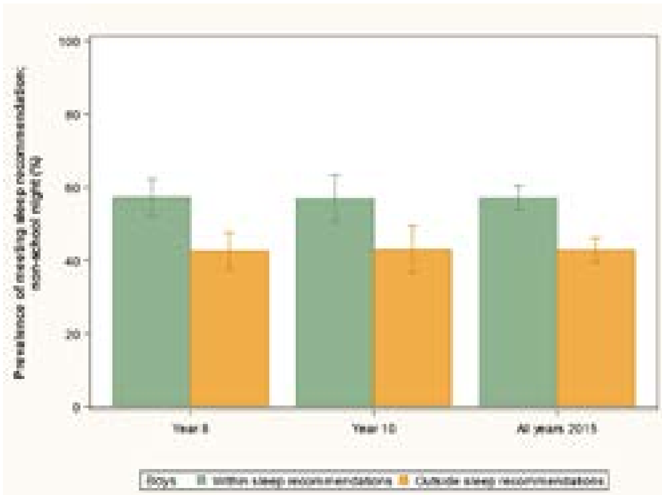
Table 12.13 Prevalence of meeting sleep recommendation on non-school nights among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	Year 10	All years
ALL			
Within sleep recommendations	52.5 (1.7)	57.9 (2.2)	55.2 (1.2)
Outside sleep recommendations	47.5 (1.7)	42.1 (2.2)	44.8 (1.2)
GIRLS			
Within sleep recommendations	**47.6 (2.2) a**	58.8 (3.0)	53.2 (1.9)
Outside sleep recommendations	52.4 (2.2)	41.2 (3.0)	46.8 (1.9)
BOYS			
Within sleep recommendations	57.3 (2.4)	57.0 (3.2)	57.1 (1.6)
Outside sleep recommendations	42.7 (2.4)	43.0 (3.2)	42.9 (1.6)

a Indicates statistically significant difference at P < 0.05 between sex and within year group.
No letter means there was no statistical difference.

Figure 12.9 Prevalence of meeting sleep recommendation on non-school nights among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)





SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately half (55%) of adolescents in secondary school met the sleep recommendation on non-school nights. Table 12.14 and Figure 12.10 show the proportion of adolescents who met the sleep recommendation on non-school nights by socio-demographic characteristics and BMI category in 2015.

Locality

2015: Overall, there were no significant differences in the prevalence of meeting the sleep recommendation on non-school nights between adolescents living in rural and urban areas.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of meeting the sleep recommendation on non-school nights between adolescents from different SES backgrounds.

Cultural background

2015: Overall, the prevalence of meeting the sleep recommendation on non-school nights was significantly lower among adolescents from European cultural backgrounds (37%), compared with adolescents from English-speaking backgrounds (56%).

Weight status

2015: Overall, the prevalence of meeting the sleep recommendation on non-school nights was significantly lower among adolescents in the thin BMI category (41%), compared with adolescents in the healthy weight BMI category (57%). The prevalence was significantly lower among girls in the thin BMI category (33%), compared with girls in the healthy BMI category (56%).

Table 12.14 Prevalence of meeting the sleep recommendation on non-school nights in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

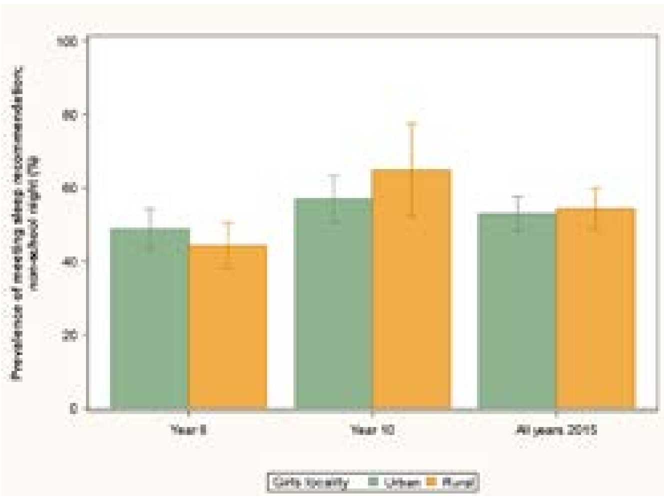
Characteristic	2015					
	Year 8		Year 10		All years	
ALL						
Locality						
Urban (ref)	52.1	(2.2)	57.8	(2.5)	55.0	(1.6)
Rural	53.5	(2.3)	58.2	(3.5)	55.8	(1.7)
SES						
Low	52.5	(2.9)	58.2	(3.8)	55.5	(1.8)
Middle	52.5	(3.1)	58.0	(3.0)	55.3	(2.0)
High (ref)	52.5	(2.4)	57.5	(4.1)	54.9	(2.5)
Cultural background						
English-speaking (ref)	53.4	(1.8)	58.5	(2.2)	55.9	(1.3)
European	32.1	(13.4)	41.4	(15.7)	**36.9**	**(8.7) a**
Middle Eastern	60.8	(7.3)	66.0	(11.9)	63.4	(8.8)
Asian	44.2	(6.0)	53.4	(7.0)	49.6	(4.5)
BMI category						
Thin	**33.9**	**(6.0) a**	49.2	(7.8)	**40.7**	**(4.7) a**
Healthy weight (ref)	54.7	(2.1)	59.0	(2.6)	56.9	(1.6)
Overweight	54.0	(4.1)	57.5	(3.6)	55.7	(2.6)
Obese	44.1	(5.4)	53.4	(7.9)	48.7	(4.2)
GIRLS						
Locality						
Urban (ref)	48.8	(2.7)	56.9	(3.2)	52.9	(2.3)
Rural	44.2	(3.1)	64.8	(6.3)	54.2	(2.8)
SES						
Low	47.0	(2.7)	57.3	(4.1)	52.1	(2.4)
Middle	45.8	(5.4)	63.5	(4.5)	55.0	(3.3)
High (ref)	49.6	(3.3)	56.1	(6.0)	52.8	(3.8)
Cultural background						
English-speaking (ref)	48.9	(2.3)	59.3	(3.1)	54.1	(1.9)
European	23.8	(13.5)	70.5	(18.8)	40.5	(9.7)
Middle Eastern	56.1	(6.6)	59.6	(15.3)	57.7	(7.4)
Asian	39.3	(7.1)	54.0	(9.1)	48.1	(6.3)
BMI category						
Thin	**32.3**	**(6.4) a**	**34.6**	**(9.9) a**	**33.3**	**(5.5) a**
Healthy weight (ref)	50.8	(3.0)	61.2	(3.5)	56.1	(2.4)
Overweight	46.7	(5.3)	55.9	(4.8)	51.4	(3.6)
Obese	**33.7**	**(6.6) a**	62.4	(12.7)	47.1	(6.3)

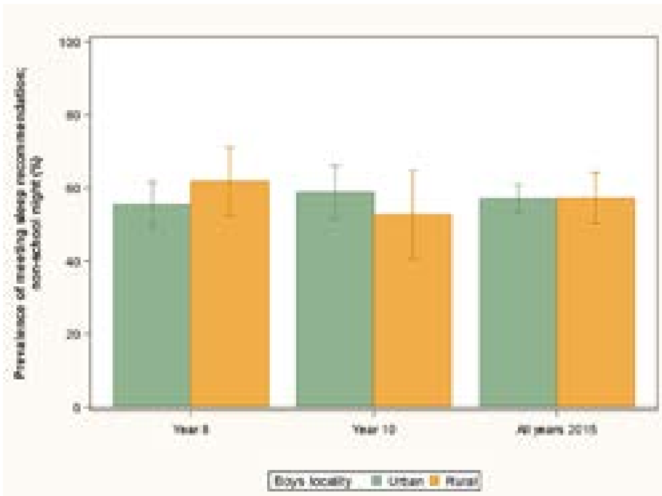
Characteristic	2015					
	Year K		Year 2		All years	
BOYS						
Locality						
Urban (ref)	55.5	(3.1)	58.8	(3.6)	57.1	(1.8)
Rural	61.8	(4.7)	52.7	(6.1)	57.2	(3.5)
SES						
Low	58.4	(4.2)	59.1	(5.3)	58.8	(2.3)
Middle	58.2	(3.6)	52.7	(5.5)	55.5	(3.2)
High (ref)	55.3	(4.1)	59.0	(4.8)	57.1	(2.6)
Cultural background						
English-speaking (ref)	57.6	(2.8)	57.7	(3.1)	57.7	(1.7)
European	57.7	(25.3)	**23.0**	**(13.7) a**	32.3	(16.5)
Middle Eastern	64.8	(11.9)	70.2	(13.2)	67.7	(11.6)
Asian	51.2	(13.1)	52.4	(9.6)	51.9	(8.4)
BMI category						
Thin	**35.6**	**(8.8) a**	61.2	(9.9)	47.8	(6.7)
Healthy weight (ref)	58.6	(3.2)	56.7	(3.5)	57.6	(2.1)
Overweight	60.5	(5.3)	59.1	(4.7)	59.8	(3.4)
Obese	56.7	(10.0)	45.0	(10.3)	50.5	(6.9)

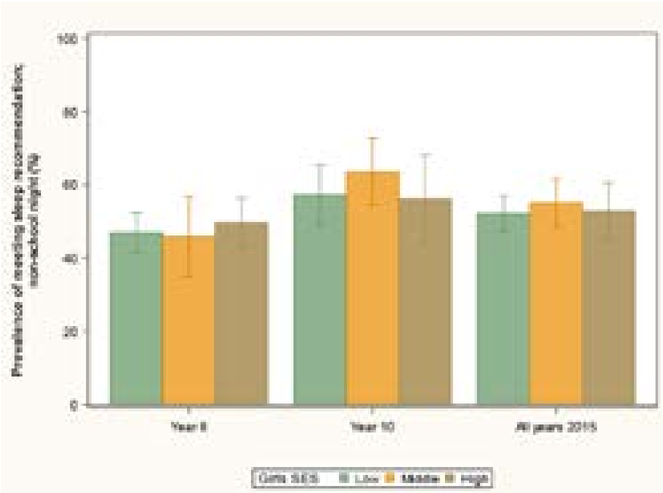
a Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.

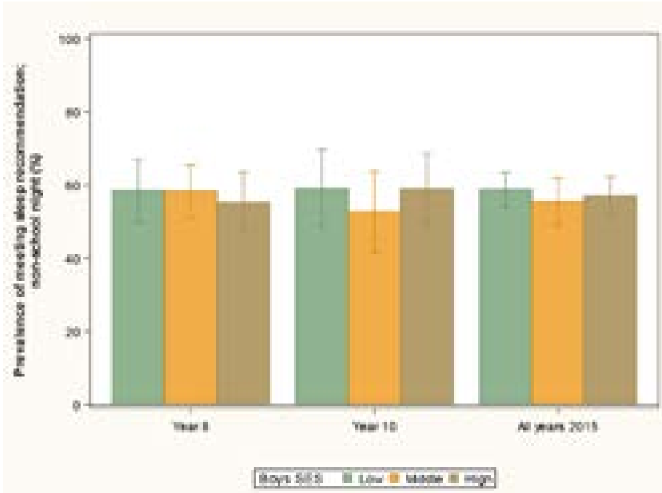
No letter means there was no statistical difference.

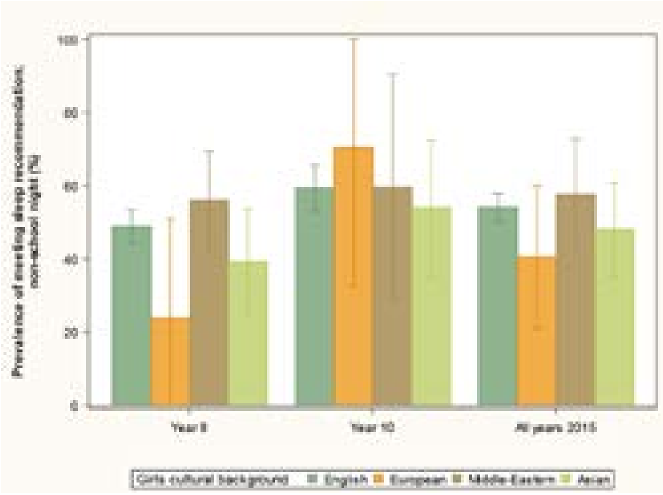
Figure 12.10 Prevalence of meeting the sleep recommendation on non-school nights in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

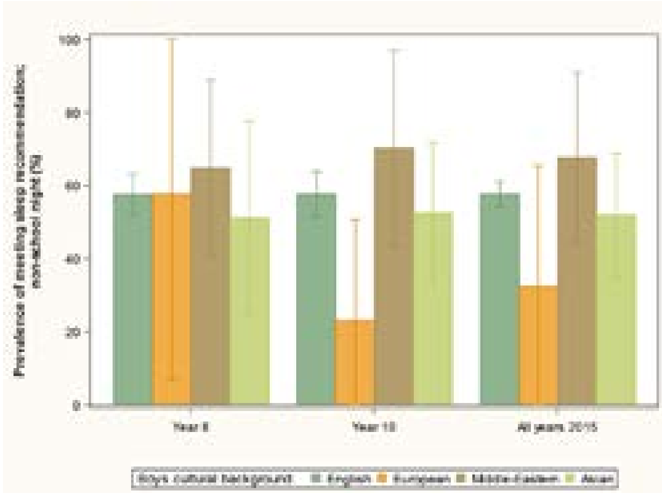


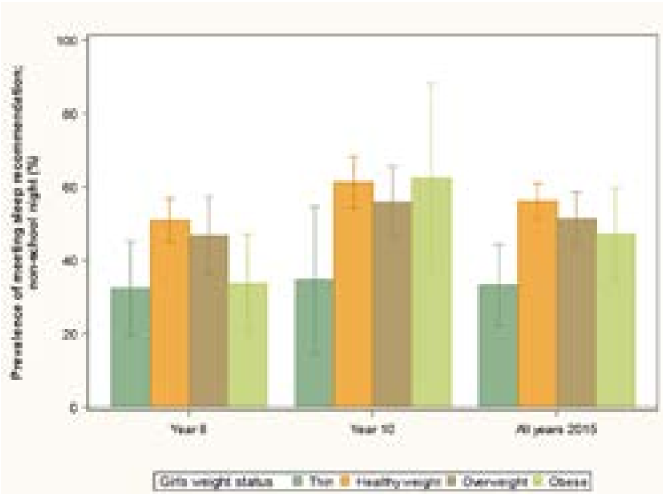


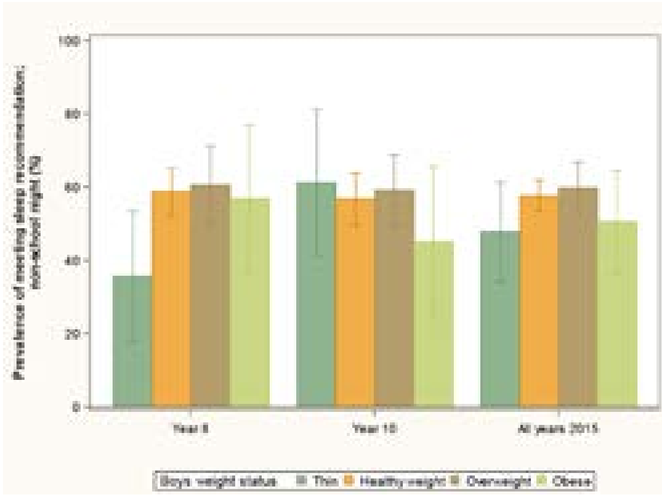

Prevalence of meeting sleep recommendation: non-school night (%)
Year 8
Year 10
All years 2015
Girls SES Low Middle High


Prevalence of meeting sleep recommendation: non-school night (%)
Year 8
Year 10
All years 2015
Boys SES Low Middle High


Prevalence of meeting sleep recommendation: non-school night (%)
Year 8
Year 10
All years 2015
Girls cultural background English European Middle-Eastern Asian


Prevalence of meeting sleep recommendation: non-school night (%)
Year 8
Year 10
All years 2015
Boys cultural background English European Middle-Eastern Asian


Prevalence of meeting sleep recommendation: non-school night (%)
Year 8
Year 10
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Prevalence of meeting sleep recommendation: non-school night (%)
Year 8
Year 10
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

USE OF ELECTRONIC MEDIA DURING SLEEP TIME

The sleep duration of adolescents appeared to have decreased over time with many adolescents sleeping less than previous generations of teenagers.[30] The use of electronic media (e.g., televisions, computers, smart phones, tablets) around bedtime is negatively associated with sleep and may potentially influence the duration of sleep in the current generation of adolescents.[31] Possible mechanisms through which electronic media may influence adolescents' sleep include media use directly displacing sleep or other activities such as physical activity, which are associated with good sleep hygiene. Media use in the evenings may increase physiological arousal causing difficulties relaxing prior to bedtime.[31]

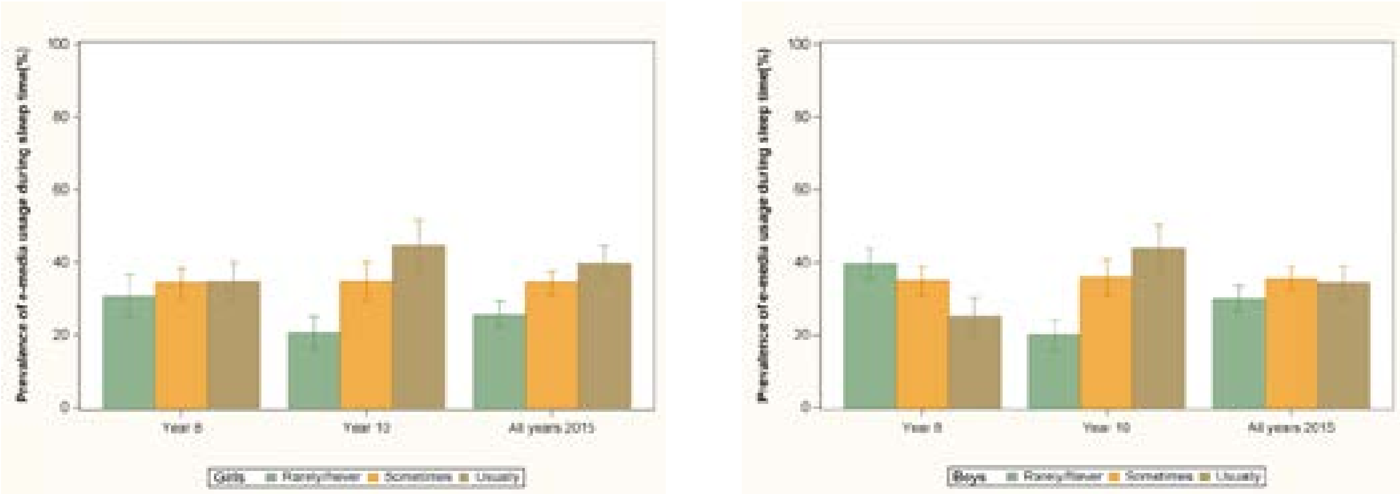
Table 12.15 and Figure 12.11 show the prevalence of using electronic media during sleep time among adolescents by sex and year group in 2015. Overall 37% of adolescents usually used elecronic media during sleep time. The prevalence appeared to be broadly consistent between boys and girls within year groups and the prevalence appeared to increase with age.

Table 12.15 Prevalence of using electronic media during sleep time among adolescents in secondary school by sex and year group in 2015 (%, SE)

	2015		
	Year 8	Year 10	All years
ALL			
Rarely/Never	35.4 (2.0)	20.3 (1.6)	27.8 (1.4)
Sometimes	34.7 (1.4)	35.3 (2.0)	35.0 (1.1)
Usually	29.9 (2.0)	44.4 (2.6)	37.1 (1.9)
GIRLS			
Rarely/Never	30.8 (2.8)	20.6 (2.3)	25.6 (1.8)
Sometimes	34.4 (2.0)	34.7 (2.7)	34.6 (1.5)
Usually	34.7 (2.6)	44.8 (3.5)	39.8 (2.5)
BOYS			
Rarely/Never	39.7 (2.0)	20.1 (2.1)	30.0 (1.7)
Sometimes	35.1 (1.9)	35.9 (2.5)	35.5 (1.6)
Usually	25.2 (2.6)	44.0 (3.2)	34.5 (2.2)

Note: No significance testing was conducted.

Figure 12.11 Prevalence of using electronic media during sleep time among adolescents in secondary school by sex and year group in 2015 (%, 95%CI)



SOCIO-DEMOGRAPHIC DIFFERENCES

The current findings indicate that approximately one in three (37%) adolescents usually used electronic media during sleep time. Table 12.16 and Figure 12.12 show the prevalence of usually using electronic media during sleep time among adolescents by sex, year group, socio-demographic characteristics and BMI category.

Locality

2015: Overall, there were no significant differences in the prevalence of usually using electronic media during sleep time between rural and urban adolescents.

Socio-economic status

2015: Overall, there were no significant differences in the prevalence of usually using electronic media during sleep time between adolescents from different SES backgrounds.

Cultural background

2015: Overall, there were no significant differences in the prevalence of usually using electronic media during sleep time between adolescents from different cultural backgrounds.

Weight status

2015: Overall, the prevalence of usually using electronic media during sleep time was significantly lower among girls in the thin BMI category (29%), compared with girls in the healthy BMI category (40%).

Table 12.16 Prevalence of usually using electronic media during sleep time in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, SE)

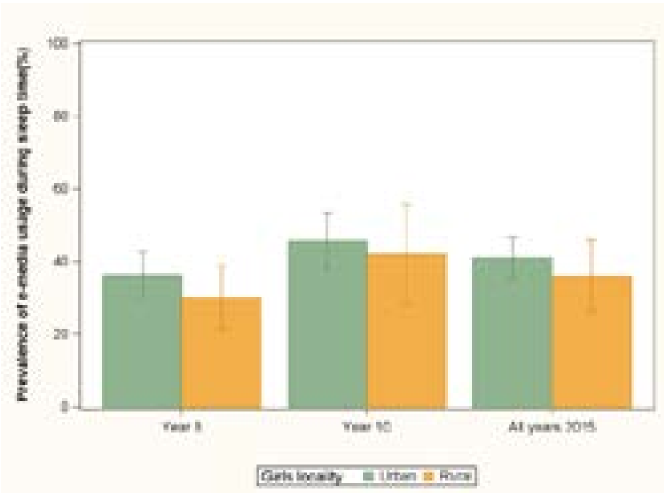
	2015					
	Year 8		Year 10		All years	
ALL						
Locality						
Urban (ref)	31.7	(2.5)	44.4	(2.8)	38.1	(2.3)
Rural	25.0	(3.3)	44.2	(5.8)	34.6	(3.5)
SES						
Low	29.6	(3.1)	44.8	(4.7)	37.4	(3.2)
Middle	30.4	(4.0)	48.4	(3.9)	39.4	(3.1)
High (ref)	29.7	(3.0)	39.9	(3.7)	34.7	(2.8)
Cultural background						
English-speaking (ref)	30.0	(2.2)	44.0	(2.8)	36.9	(2.0)
European	43.1	(13.4)	48.0	(14.8)	45.5	(9.8)
Middle Eastern	31.4	(10.3)	49.5	(12.3)	40.4	(8.7)
Asian	26.5	(4.8)	44.6	(4.5)	37.0	(4.4)
BMI category						
Thin	23.5	(4.5)	45.3	(8.0)	33.0	(4.4)
Healthy weight (ref)	29.9	(2.6)	42.8	(2.7)	36.4	(2.1)
Overweight	30.4	(3.8)	50.4	(4.5)	40.3	(3.4)
Obese	34.2	(6.5)	36.4	(8.9)	35.3	(5.0)
GIRLS						
Locality						
Urban (ref)	36.3	(3.2)	45.7	(3.9)	41.1	(2.8)
Rural	30.1	(4.3)	42.0	(6.8)	36.1	(4.9)
SES						
Low	34.3	(4.3)	48.8	(5.8)	41.7	(4.4)
Middle	38.1	(5.3)	47.2	(5.4)	42.8	(4.5)
High (ref)	32.4	(3.9)	38.4	(5.4)	35.4	(3.1)
Cultural background						
English-speaking (ref)	34.4	(2.9)	42.9	(3.7)	38.7	(2.6)
European	38.4	(15.3)	45.8	(19.0)	41.1	(10.9)
Middle Eastern	45.0	(9.3)	66.3	(17.7)	54.2	(10.7)
Asian	33.2	(6.7)	51.5	(5.1)	44.0	(4.9)
BMI category						
Thin	24.7	(6.3)	34.0	(10.1)	**28.5**	**(5.5) a**
Healthy weight (ref)	34.6	(3.4)	45.8	(3.6)	40.4	(2.8)
Overweight	40.0	(4.9)	47.1	(6.0)	43.6	(4.3)
Obese	30.4	(8.3)	30.1	(13.3)	30.3	(5.9)

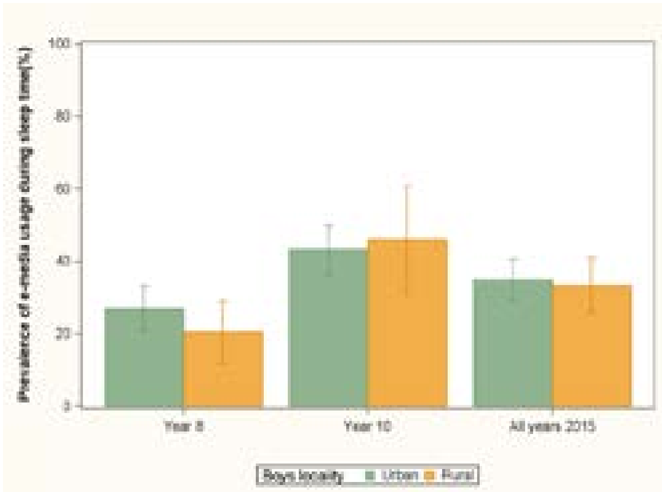
	2015		
	Year K	Year 2	All years
BOYS			
Locality			
Urban (ref)	27.1 (3.1)	43.1 (3.4)	35.0 (2.8)
Rural	20.5 (4.2)	46.1 (7.3)	33.3 (3.8)
SES			
Low	24.7 (3.4)	41.0 (5.6)	33.3 (3.1)
Middle	23.8 (3.8)	49.5 (4.2)	36.4 (2.8)
High (ref)	27.0 (4.3)	41.7 (4.3)	33.9 (3.8)
Cultural background			
English-speaking (ref)	26.0 (2.9)	45.1 (3.3)	35.3 (2.3)
European	57.6 (25.1)	49.9 (21.9)	52.5 (13.0)
Middle Eastern	17.6 (12.2)	38.5 (13.6)	29.0 (9.2)
Asian	17.2 (6.5)	34.0 (7.6)	26.7 (6.3)
BMI category			
Thin	22.2 (7.2)	54.4 (10.1)	37.1 (6.2)
Healthy weight (ref)	25.3 (3.3)	39.6 (3.5)	32.4 (2.5)
Overweight	21.9 (4.5)	**53.8 (6.4) a**	37.2 (4.6)
Obese	38.5 (10.7)	42.1 (10.3)	40.4 (7.5)

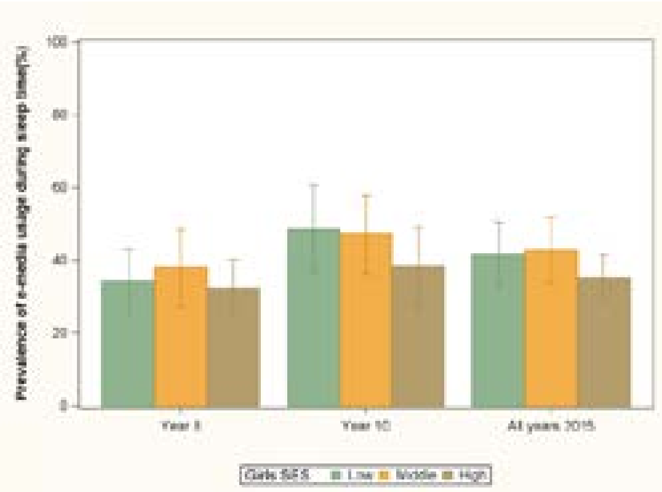
a Indicates statistically significant difference at P < 0.05. Comparisons are within each sex and year group and are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.

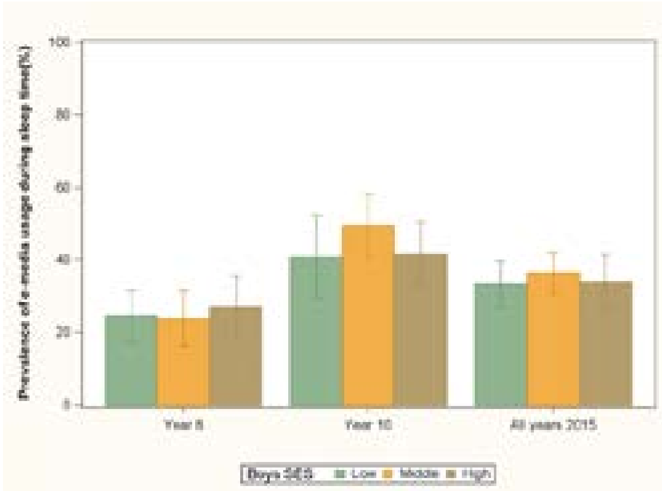
No letter means there was no statistical difference.

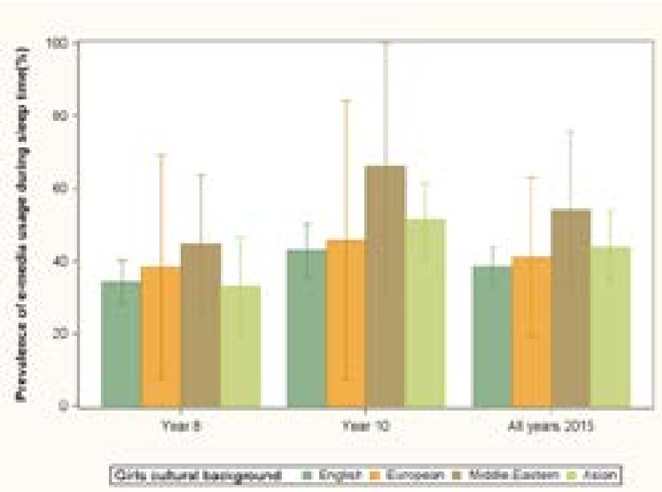
Figure 12.12 Prevalence usually using electronic media during sleep time in secondary school by sex, year group, socio-demographic characteristics and BMI category in 2015 (%, 95%CI)

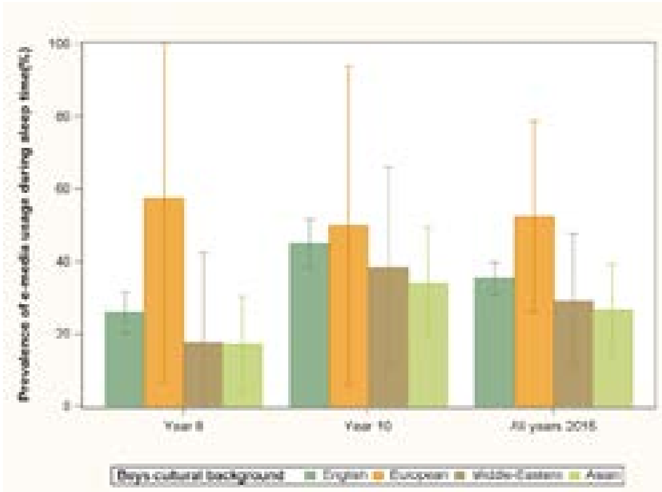


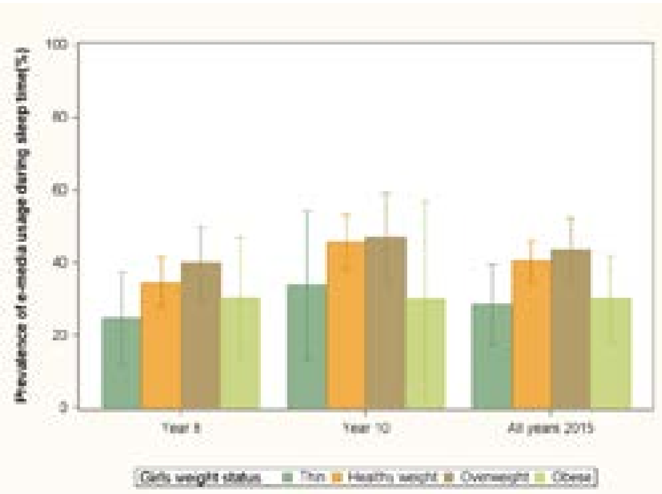


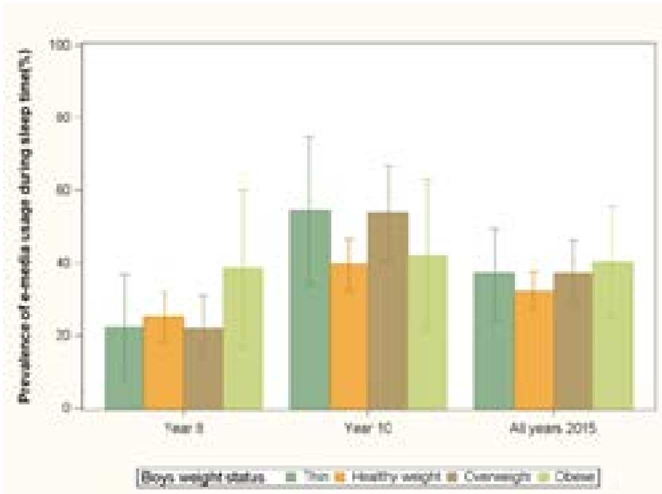

Prevalence of e-media usage during sleep time(%)
Year 8
Year 10
All years 2015
Girls SES Low Middle High


Prevalence of e-media usage during sleep time(%)
Year 8
Year 10
All years 2015
Boys SES Low Middle High


Prevalence of e-media usage during sleep time(%)
Year 8
Year 10
All years 2015
Girls cultural background English European Middle-Eastern Asian


Prevalence of e-media usage during sleep time(%)
Year 8
Year 10
All years 2015
Boys cultural background English European Middle-Eastern Asian


Prevalence of e-media usage during sleep time(%)
Year 8
Year 10
All years 2015
Girls weight status Thin Healthy weight Overweight Obese


Prevalence of e-media usage during sleep time(%)
Year 8
Year 10
All years 2015
Boys weight status Thin Healthy weight Overweight Obese

SUMMARY OF THE SLEEPING HABITS OF ADOLESCENTS IN SECONDARY SCHOOL

The table below summarises the indicators of sleep hygiene habits in adolescents in secondary school.

Sleep indicator	Guidelines	SPANS cut point	Time, duration or prevalence 2010	Time, duration or prevalence 2015	Significant subgroup findings for 2015*
SCHOOL NIGHTS					
Bedtime	There are no specific guidelines	None	Not collected in 2010	10.01 pm	**2015:** Subgroup differences were not assessed
Wake-up time	There are no specific guidelines	None		6.50 am	**2015:** Subgroup differences were not assessed
Sleep duration	For healthy teenagers with normal sleep, the recommendations are that adolescents sleep between 8 and 10 hours.[24]	Between 8.0 and 10.0 hours/night		8 hours 48 mins	**2015:** Subgroup differences were not assessed
Meet sleep recommendation				74.5%	**2015:** Overall, there were no significant differences in the proportion of adolescents meeting the sleep recommendation on school nights between adolescent subgroups.
NON-SCHOOL NIGHTS					
Bedtime	There are no specific guidelines	None	Not collected in 2010	11.16 pm	**2015:** Subgroup differences were not assessed
Wake-up time	There are no specific guidelines	None		9.01 am	**2015:** Subgroup differences were not assessed
Sleep duration	For healthy teenagers with normal sleep, the recommendations are that adolescents sleep between 8 and 10 hours[24]	Between 8.0 and 10.0 hours/night		9 hours 45 mins	**2015:** Subgroup differences were not assessed
Meet sleep recommendation				55.2%	**2015:** Overall, the proportion of adolescents meeting the sleep recommendation on non-school nights was significantly lower among adolescents from European cultural backgrounds and in the thin BMI category
SLEEP RISK FACTOR					
Using electronic media during sleep time	There are no specific guidelines	'Usually'	Not collected in 2010	37.1%	**2015:** Overall, there were no significant differences in the proportion of adolescents that usually used electronic media during sleep time between adolescent subgroups

* *Comparisons are between rural compared with urban; low and middle SES compared with high SES; European, Middle Eastern and Asian cultural backgrounds compared with English-speaking cultural background; and thin, overweight and obese compared with healthy weight BMI category.*

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CHAPTER 13: SCHOOLS' NUTRITION AND ACTIVITY ENVIRONMENTS

SNAPSHOT: PRIMARY & SECONDARY SCHOOLS (RURAL & URBAN COMBINED)

Up to
17%
of urban primary schools do not deliver PE lessons

80%
of principals considered the school area had adequate green space for active play

2015

Primary schools (rural & urban)

- 85% of principals considered the school area had adequate green space for active play
- Few schools encouraged students to use the school's physical activity facilities and equipment before (18%) or after (14%) school hours
- Up to 17% of urban primary schools do not deliver PE lessons
- Generalist teachers deliver PE and sport in four out of five schools
- The main barrier to promoting physical activity was competing demands on curriculum time (52%)
- The main approaches to promoting student physical activity were encouraging use of equipment and facilities during school (84%), encouraging students to be more active outside school (66%) and encouragement or merit awards (61%)
- Healthy eating and physical activity school-based initiatives were more common in rural schools

Secondary schools (rural & urban)

- 80% of principals considered the school area had adequate green space for active play
- The majority of areas for physical activity were used by students 4-5 days a week
- All schools delivered PE lessons
- In urban schools, specialist PDHPE teachers deliver PE (83%) and sport is delivered mainly by generalist teachers (46%). In rural schools, specialist PDHPE teachers deliver PE (50%) and sport is delivered mainly by generalist teachers (67%)
- The main barriers to promoting physical activity were competing demands on curriculum time (81%) and a lack of student interest (75%)
- The main approach to promoting student physical activity was through encouragement or merit awards (56%)
- Overall, the responses indicate that while schools are addressing factors in their food environment to promote healthy eating, there is room for greater support as schools reported that there were activities they would like to implement but had not yet done so

CONTEXT

Australian schoolchildren spend approximately 35 hours per week, or around one third of their day, at school. Given the majority of children attend school, schools have been identified as a key setting for promoting healthy lifestyle behaviours.[1] More recently, schools have also been identified as an important sector that can assist in the prevention of unhealthy weight gain, through improving their food and physical activity environments.[2-4] Over 30 school-based obesity prevention interventions targeting healthy eating and physical activity have been conducted in Australia, with the evidence showing no single approach can be applied universally across schools.[5]

While the public school sector has moved to increase school-based levels of governance and principal autonomy, the NSW Board of Studies, Teaching and Educational Standards requires schools to deliver planned physical activity through Personal Development, Health and Physical Education (PDHPE) for a minimum of 1.5 hours per week. The NSW Department of Education and Communities has outlined mandatory requirements for schools in the *Policy Standards for Curriculum Planning and Programming, Assessing and Reporting to Parents K – 12.*

Additionally, the Sport and Physical Activity Policy (previously Sport and Physical Activity Safety Policy for Schools) has been revised and provides new requirements relating to mandatory weekly participation in sport and physical activity for students. The policy states;

> *Students in Years K-10 are required to participate in a minimum of 150 minutes of planned moderate with some vigorous physical activity across the school week. Student participation in planned physical activity includes time spent in physical education, sport and other structured physical activities.*

In NSW, a range of government funded school-based initiatives have been developed to support delivery of healthy eating and physical activity programs in primary schools. Many of these programs have been operational for over five years, so the impact of these interventions may become apparent in the near future. Schools are, however, only one setting in which to influence children's behaviour; further, schools' participation in these programs is voluntary and up-take and fidelity of program delivery is not known.

Good quality facilities and equipment within a school may promote or hinder the type and intensity of physical activity at school.[6] Higher rates of free time physical activity among students occur in those schools which have greater opportunities and facilities.[7] For example, the provision of and access to multi-coloured playground markings, physical structures and game equipment during breaks are associated with increased physical activity among primary school students.[8, 9]

In NSW primary schools, sport and physical education (PE) programs are delivered primarily by generalist teachers (i.e., classroom teachers) rather than specialist PE teachers. PE specialists typically produce more favourable outcomes than generalists in terms of children's physical activity, physical fitness and motor skills.[10] A lack of teacher confidence and time are significant barriers to delivering quality PE programs and have led to an increasing trend among Australian primary schools to use external providers to deliver various PE activities.[11]

In Australia, school canteens are an integral part of the school environment and represent the largest take-away food outlet for children. The canteen provides a revenue source for many schools and this may influence the availability of less healthy products (i.e., high in fat, salt and sugar), which are popular food choices.[12, 13] Since 2005, Australia has progressively introduced healthy food policy guidelines for school canteens but evidence shows that schools, and high schools in particular, struggle to adhere to healthy canteen policy guidelines.[14, 15]

In order to have a better understanding of schools' capacities to deliver PE and sport and to provide physical activity and healthy eating opportunities, school principals were asked to complete an online questionnaire on their school's physical and nutrition environment, school policies and school practices. This chapter presents the findings from the School Environment Questionnaire and is based on responses from the primary and secondary schools that participated in SPANS 2015, including the practice schools. The findings represent approximately 3.0% and 6.4% of NSW primary and secondary schools, respectively hence the findings need to be interpreted with this in mind.

PRIMARY SCHOOLS

In total, principals from 45 primary schools (rural = 9; urban = 36) completed the School Environment Questionnaire. These schools included the practice and participating schools in SPANS (response rate, 98%).

The mean number of teachers employed in these urban and rural schools was 30.6 (SD 11.8) and 23.4 (SD 5.7) respectively. Just over one-third (36%) of schools employed a specialist PE teacher. Proportionally, specialist PE teacher represented 2% and 0.1% of the total number of teachers employed in urban and rural schools respectively.

Of the participating schools, one-third (n=15; 14 urban and 1 rural school) were currently upgrading their facilities to provide or improve physical activity opportunities for students.

FACILITIES FOR PHYSICAL ACTIVITY, SPORT AND PE IN PRIMARY SCHOOLS

Tables 13.1 and 13.2 show the proportion of facilities associated with physical activity which were present, available, and used before, after and during lunchtimes, in urban and rural primary schools respectively.

All schools had a playground/quadrangle available during break time and in the majority of schools, it was used by students 4-5 days/week. Compared with urban schools, a higher proportion of rural schools had playing fields as part of their school grounds (89% v 75%) and a bike path near the school (56% v 39%). The least common facility in urban and rural primary schools was loose play equipment (42% and 22% respectively).

Table 13.1 Presence, availability and use of facilities associated with physical activity in urban primary schools (n=36) (%)

School facility	Present	If present, available during recess/ lunch	If available during recess/lunch, frequency used by students		
			Rarely	1-3 days/week	4-5 days/week
Playground/quadrangle	100.0	100.0	0	5.6	94.4
Playground markings that encourage activity	97.2	100.0	0	8.6	91.4
Useable outdoor basketball/netball courts	91.7	90.9	0	10.0	90.0
Playing fields as part of the school grounds	75.0	96.3	0	0	100.0
Playing fields within reasonable walking distance	83.3	33.3	10.0	20.0	70.0
An indoor playing space (e.g., school hall) during wet/hot weather	83.3	50.0	6.7	66.7	26.7
A bike path near or around the school	38.9	n/a	n/a	n/a	n/a
Adequate sporting equipment, such as balls and bats	94.4	91.2	0	6.3	93.8
Fixed play equipment	77.8	96.4	0	3.7	96.3
Loose play equipment (e.g., playpods)	41.7	86.7	0	7.7	92.3

n/a = not applicable

Table 13.2 Presence, availability and use of facilities associated with physical activity in rural primary schools (n=9) (%)

School facility	Present	If present, available during recess/ lunch	If available during recess/lunch, frequency used by students		
			Rarely	1-3 days/week	4-5 days/week
Playground/quadrangle	100.0	100.0	0	0	100.00
Playground markings that encourage activity	88.9	100.0	0	0	100.00
Useable outdoor basketball/netball courts	88.9	100.0	0	0	100.00
Playing fields as part of the school grounds	88.9	87.5	0	0	100.00
Playing fields within reasonable walking distance	77.8	42.9	0	33.3	66.7
An indoor playing space (e.g., school hall) during wet/hot weather	100.0	77.8	14.3	57.1	28.6
A bike path near or around the school	55.6	n/a	n/a	n/a	n/a
Adequate sporting equipment, such as balls and bats	100.0	100.0	0	0	100.00
Fixed play equipment	100.0	100.0	0	0	100.00
Loose play equipment (e.g., playpods)	22.2	100.0	0	0	100.00

n/a = not applicable

More than 85% of schools (86% urban; 89% rural) indicated that their green space was adequate for active play. Principals who did not feel they had adequate green space for active play were from older schools, with most established over 70 years ago when the school space was potentially adequate for the student population at the time.

Table 13.3 shows the majority of urban (~70%) and rural (~90%) principals reported their schools' sport and PE facilities and equipment were good or excellent. Schools reporting their sport and PE facilities as either poor or fair included schools from each socio-economic quintile.

Table 13.3 Adequacy of school sports and PE facilities in urban and rural primary schools (%)

Adequacy of sports/PE facilities & equipment	Facilities		Equipment	
	Urban (n=36)	Rural (n=9)	Urban (n=36)	Rural (n=9)
Poor, in need of much improvement	5.6	0	2.8	0
Fair, in need of some improvement	25.0	11.1	25.0	11.1
Good, in need of little improvement	41.7	55.6	50.0	33.3
Excellent	27.8	33.3	22.2	55.6

In total, 38% of schools indicated they would consider funding improvements for sport and PE facilities and equipment. Table 13.4 shows over half of the principals who reported poor or fair sport and PE facilities would consider funding improvements, and almost half (47%) of the principals who reported good or excellent facilities also indicated they would consider funding improvements for sport and PE facilities.

Similarly, almost half (47%) of the principals who reported their school's sport and PE equipment as fair, reported they would consider funding to improve the current equipment. Additionally, 53% of principals who reported their sport and PE equipment was good or excellent, also indicated they would consider funding for improvement in equipment.

Table 13.4 Primary schools that would consider funding for improvements for sport and PE facilities and equipment (%) (n= 17)

Condition of sport/PE facilities equipment	Facilities	Equipment
Poor, in need of much improvement	11.8	0.0
Fair, in need of some improvement	41.2	47.1
Good, in need of little improvement	35.3	47.1
Excellent	11.8	5.9

DELIVERY OF SPORT AND PE IN PRIMARY SCHOOLS

Most but not all, (89%) principals reported their schools deliver PE and sport lessons* to students in all years each week. The median number of PE and sport lessons each week for all year groups was two.

Frequency of PE lessons in primary schools

Tables 13.5 and 13.6 show the prevalence of the number of PE lessons per week delivered by urban and rural schools respectively. Approximately two-thirds of urban primary schools allocated one lesson of PE per week for each year group. Approximately one-third of rural primary schools deliver PE once a week and approximately one-third deliver PE twice a week. Between 8-17% of urban primary schools do not deliver PE lessons.

**PE programs are planned instructional programs with educational objectives that link to curriculum documents; are conducted by teachers; aim to increase physical development and competence; integrate intellectual, social and emotional learning through movement; and take place during timetabled school time so that all students participate.*

School sport is a co-curriculum activity provided in conjunction with a physical education or sport education program. School sport gives students the opportunity to continue their physical, social and personal skills education through competition at the intra-school, inter-school, local, state, national and international levels. (Source: The Australian Council for Health, Physical Education and Recreation (ACHPER) 2010)

Table 13.5 Prevalence of the number of PE lessons delivered in urban primary schools (n=36) (%)

Lessons per week (n)	Year group						
	Year K	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
None	11.1	8.3	8.3	11.1	11.1	16.7	16.7
1	63.9	69.4	72.2	66.7	63.9	61.1	63.9
2	13.9	11.1	11.1	13.9	16.7	19.4	16.7
3	2.8	2.8	-	8.3	8.3	2.8	2.8
4	2.8	2.8	5.6	-	-	-	-
5	5.6	5.6	2.8	-	-	-	-
Mean (SD)	2.4 (1.2)	2.4 (1.1)	2.2 (.9)	2.2 (.7)	2.2 (.8)	2.1 (.7)	2.0 (.7)
Median [IQR]	2.0 [2.0, 2.7]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]

Table 13.6 Prevalence of the number of PE lessons delivered in rural primary schools (n=8) (%)

Lessons per week (n)	Year group						
	Year K	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
None	-	-	-	-	-	-	-
1	50.0	37.5	37.5	37.5	37.5	37.5	37.5
2	37.5	50.0	37.5	37.5	37.5	37.5	37.5
3	12.5	12.5	12.5	12.5	12.5	12.5	12.5
4	-	-	12.5	12.5	12.5	12.5	12.5
Mean (SD)	2.6 (.7)	2.7 (.7)	3.0 (1.1	3.0 (1.1)	2.2 (.8)	2.1 (.7)	2.0 (.7)
Median [IQR]	2.0 [2.0, 3.0]	2.0 [2.0, 3.0]	2.0 [2.0, 3.7]	2.0 [2.0, 3.7]	2.0 [2.0, 3.7]	2.0 [2.0, 3.7]	2.0 [2.0, 3.7]

Frequency of sport lessons in primary schools

Tables 13.7 and 13.8 show the prevalence of the number of sport lessons per week delivered by urban and rural primary schools, respectively. Over 70% of urban schools deliver one sport lesson per week to students in Years K,-2 and over 80% of schools deliver one sport lesson per week to students in Years 3-6. Approximately 23-30% of urban schools did not provide sport to students in Years K-2 and 10% did not provide sport to students in Years 4-6. With the exception of kindergarten, all rural schools provided students with one sport lesson per week.

Table 13.7 Prevalence of the number of sport lessons delivered in urban primary schools (n=30) (%)

Lessons per week (n)	Year group						
	Year K	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
None	30.0	26.7	23.3	13.3	10.0	10.0	10.0
1	70.0	70.0	73.3	86.7	83.3	83.3	83.3
2	-	3.3	3.3	-	3.3	3.3	3.3
3	-	-	-	-	3.3	3.3	3.3
Mean (SD)	1.7 (.5)	1.8 (.5)	1.8 (.5)	1.9 (.3)	2.0 (.5)	2.0 (.5)	2.0 (.5)
Median [IQR]	2.0 [1.0, 2.0]	2.0 [1.0, 2.0]	2.0 [1.7, 2.0]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]

Table 13.8 Prevalence of the number of sport lessons delivered in rural primary schools (n=8) (%)

Lessons per week (n)	Year group						
	Year K	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
None	12.5	-	-	-	-	-	-
1	87.5	100.0	100.0	100.0	100.0	100.0	100.0
Mean (SD)	1.9 (.3)	2.0 (0)	2.0 (0)	2.0 (0)	2.0 (0)	2.0 (0)	2.0 (0)
Median [IQR]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]	2.0 [2.0, 2.0]

Duration of primary school PE and sport lessons

Tables 13.9 and 13.10 show the estimated time per week allocated to PE and sport lessons by urban and rural schools respectively. The majority of urban and rural schools allocated up to 60 minutes each for PE lessons and sport lessons.

Table 13.9 Duration of PE and sport lessons in urban primary schools (%)

Lesson duration (min)	Year group						
	Year K	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PE LESSONS	*(n=32)*	*(n=33)*	*(n=33)*	*(n=32)*	*(n=32)*	*(n=30)*	*(n=30)*
1-60	93.8	93.9	93.9	90.6	90.6	93.3	93.3
61-90	3.1	3.0	3.0	9.4	9.4	6.7	3.3
91+	3.1	3.0	3.0	-	-	-	3.3
SPORT LESSONS	*(n=35)*	*(n=25)*	*(n=27)*	*(n=30)*	*(n=31)*	*(n=31)*	*(n=31)*
1-60	94.3	92.0	92.6	80.0	80.6	77.4	77.4
61-90	2.9	8.0	7.4	10.0	9.7	12.9	12.9
91+	2.9	-	-	10.0	9.7	9.7	9.7

Table 13.10 Duration of PE and sport lessons in rural primary schools (%))

Lesson duration (min)	Year group						
	Year K	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
PE LESSONS	*(n=8)*	*(n=33)*	*(n=33)*	*(n=32)*	*(n=32)*	*(n=30)*	*(n=30)*
1-60	100.0	100.0	100.0	100.0	100.0	100.0	100.0
61-90	-	-	-	-	-	-	-
91+	-	-	-	-	-	-	-
SPORT LESSONS	*(n=8)*	*(n=8)*	*(n=8)*	*(n=8)*	*(n=8)*	*(n=8)*	*(n=8)*
1-60	100.0	100.0	100.0	87.5	87.5	75.0	75.0
61-90	-	-	-	12.5	12.5	25.0	25.0
91+	-	-	-	-	-	-	-

Table 13.11 shows that in the majority of primary schools, the classroom teacher delivers PE and sport lessons, with a higher proportion among rural than urban schools. In urban schools, 22% of PE and 11% of sport classes were delivered by specialist PDHPE teachers; while in rural schools, 13% of PE and no sport lessons were delivered by specialist PDHPE teachers. One in 10 urban schools engaged external agencies to deliver sport. Parents were not involved in the delivery of PE or sport in schools.

Table 13.11 Adults involved in the delivery of PE and sport in urban and rural primary schools (%))

	Urban (n=36)		Rural (n=8)	
	PE	Sport	PE	Sport
Classroom teachers	58.3	66.7	75.0	100.0
Specialist PDHPE teachers	22.2	11.1	12.5	-
Parents	-	-	-	-
Outside sporting groups or external contractors	-	11.1	-	-
Relief from face-to-face teachers	19.4	-	12.5	-

Table 13.12 shows that overall, the majority of primary school principals reported they were supportive of PE and sport, with a slightly higher proportion of parental support for PE and sport in rural primary schools.

Table 13.12 Level of support for sport and PE in urban and rural primary schools (%)

	Urban (n=28)			Rural (n=8)		
	Poor	Fair	Good	Poor	Fair	Good
Sport	2.8	30.6	66.7	12.5	12.5	75.0
PE	8.3	25.0	66.7	12.5	12.5	75.0
PE and sport by parents	13.9	33.3	52.8	-	12.5	87.5
Teaching fundamental movement skills	5.6	41.7	52.8	-	25.0	75.0

PERCEIVED BARRIERS TO ENHANCING SKILL DEVELOPMENT, FITNESS AND PHYSICAL ACTIVITY IN PRIMARY SCHOOLS

Figures 13.1 and 13.2 show there were differences between urban and rural primary school principals' perceptions of barriers to enhancing students' skill development, fitness and physical activity. Competing demands on curriculum time is a clear barrier to schools enhancing students' skill development, fitness and physical activity.

Approximately two in five urban primary school principals reported the absence of a quality PE or sport program as a barrier, compared with one in four rural schools. Other clear barriers reported by over 80% of urban primary schools included teacher expertise (86%), motivation of staff to teach fundamental movement skills (FMS) or promote physical activity (83%), and lack of wet/hot weather facilities (81%).

In most primary schools, especially rural ones, a lack of student interest, gender, cultural background, and the design of the girls' sports uniform were typically not perceived as barriers to enhancing students' skill development, fitness, and physical activity.

Figure 13.1 Prevalence of perceived barriers to enhance skill development, fitness and physical activity in urban primary schools (n=36) (%)

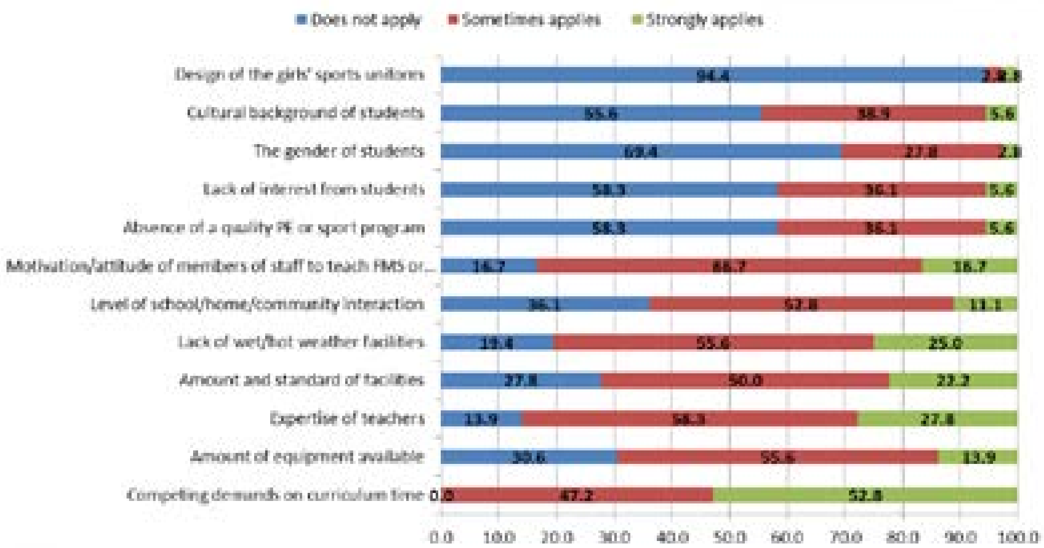
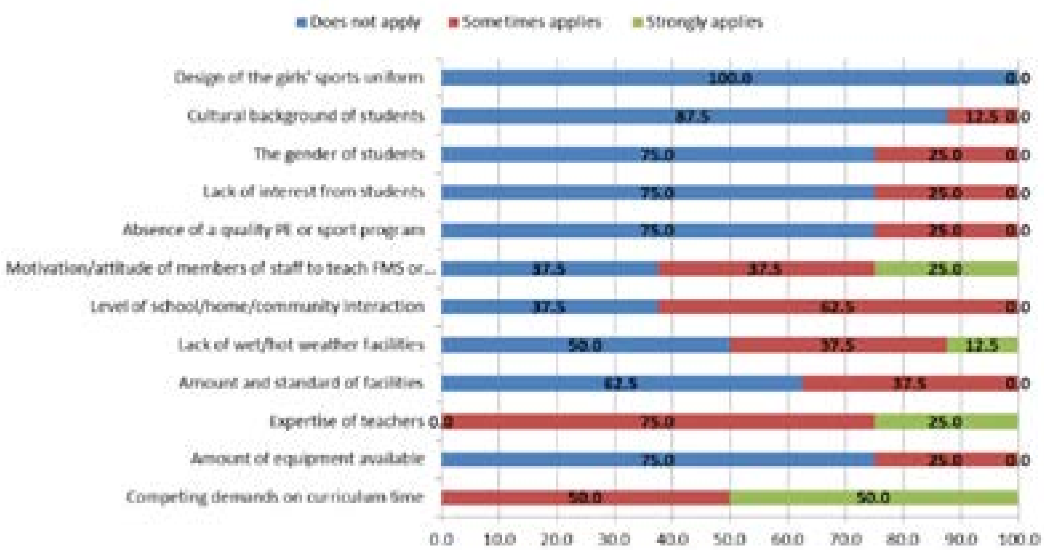


Figure 13.2 Prevalence of perceived barriers to enhance skill development, fitness and physical activity in rural primary schools (n=8) (%)



APPROACHES PRIMARY SCHOOLS CAN USE TO PROMOTE PHYSICAL ACTIVITY

Figures 13.3 and 13.4 show potential approaches school principals could use to promote physical activity among students were consistent between rural and urban schools. The majority of urban school principals sometimes or usually applied 10 of the 14-listed approaches, while rural schools applied 12 of them.

All schools included physical activity in PDHPE scope and sequence. Approaches with a higher prevalence of 'never' applying include 'encouraging the use of equipment and facilities after school' and 'encouraging staff members to be involved in lunchtime physical activity programs'. Additionally, in urban schools 'encouraging the use of equipment and facilities before school' and 'remedial motor skills programs for students' had a higher prevalence of 'never' applying. All of the afore-mentioned approaches directly involve staff time.

Figure 13.3 Potential approaches schools can use to promote students' physical activity in urban primary schools (n=36)

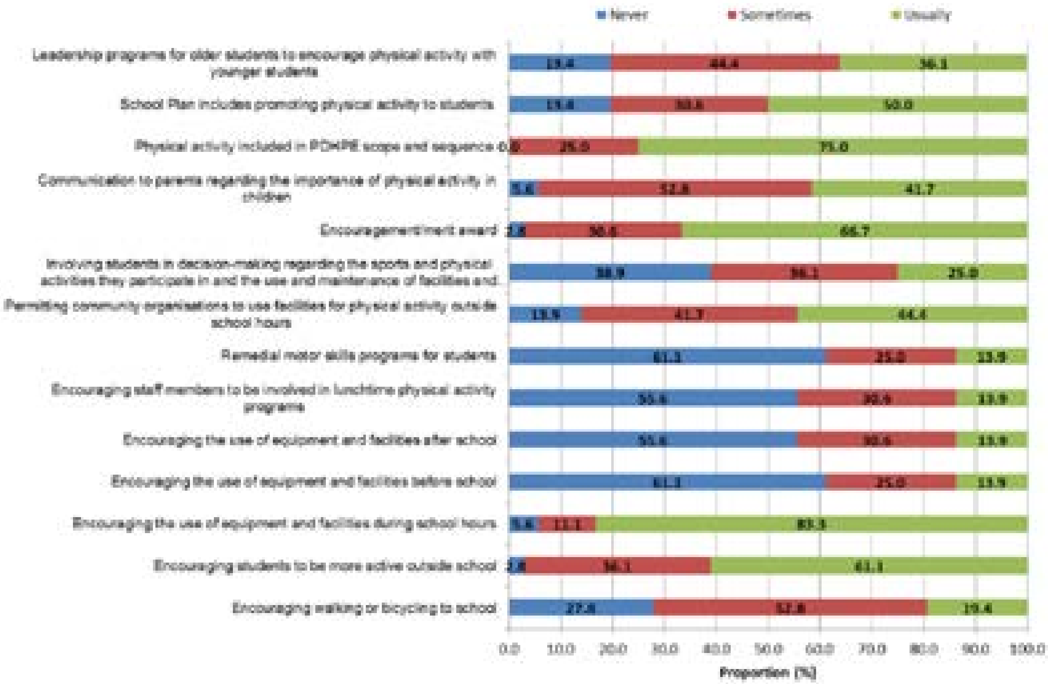
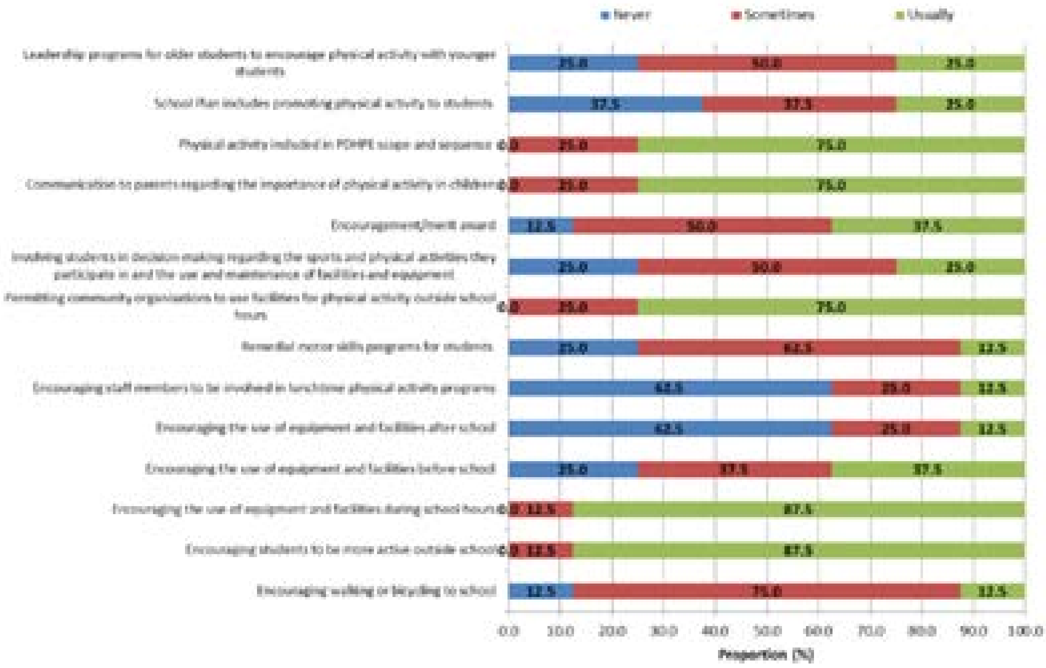


Figure 13.4 Potential approaches schools can use to promote students' physical activity in rural primary schools (n=8)



PRIMARY SCHOOL FOOD ENVIRONMENT

Principals were asked to report on a range of practices that can promote and support healthy eating within the student and the school community. Tables 13.13 and 13.14 show the practices are fairly consistent between urban and rural primary schools; however, a higher proportion of urban schools indicated they did not currently have some listed practices, but would like to adopt them.

Table 13.13 School food environment in urban primary schools (n=36) (%)

School food environment	Yes	No	No, but would like to
Include healthy eating in PDHPE scope and sequence	97.2	-	2.8
Address healthy eating in the School Plan	61.1	25.0	13.9
Have healthy fundraising options	36.1	41.7	22.2
Encourage the provision of healthy food & drinks to students for activities including excursions, camps, sport carnivals & other school functions	94.4	-	5.6
Promote and model healthy eating during school activities involving the wider community, including school fetes and school functions	66.7	13.9	19.4
Communicate to parents the importance of healthy eating	94.4	2.8	2.8

Table 13.14 School food environment in rural primary schools (n=8) (%)

School food environment	Yes	No	No, but would like to
Include healthy eating in PDHPE scope and sequence	100.0	-	-
Address healthy eating in the School Plan	62.5	37.5	
Have healthy fundraising options	50.0	25.0	25.0
Encourage the provision of healthy food & drinks to students for activities including excursions, camps, sport carnivals & other school functions	100.0	-	-
Promote and model healthy eating during school activities involving the wider community, including school fetes and school functions	87.5	-	12.5
Communicate to parents the importance of healthy eating	100.0	-	-

PRIMARY SCHOOL CANTEEN PRACTICES

Principals were asked to report if their school had a canteen and the practices associated with it. Tables 13.15 and 13.16 show the majority of urban and all rural primary had a canteen and a canteen manager. Approximately one-third of all primary schools did not address healthy canteens in the School Plan. While two in five urban primary schools reported compliance with the NSW Ministry of Health's *Fresh Tastes @ School* (NSW Healthy School Canteen Strategy), almost 90% of rural primary schools reported having implemented the strategy.

Table 13.15 Urban primary school canteen practices (n=36) (%)

School canteen practices	Yes	No	No, but would like to
School has a canteen	91.7	8.3	-
School has a canteen manager	88.9	11.1	-
School has healthy canteens in the School Plan	55.6	36.1	8.3
School has "Fresh Tastes @ School" NSW Healthy School Canteen Strategy	38.9	36.1	25.0

Table 13.16 Rural primary school canteen practices (n= 8) (%)

School canteen practices	Yes	No	No, but would like to
School has a canteen	100.0	-	-
School has a canteen manager	87.5	12.5	-
School has healthy canteens in the School Plan	37.5	37.5	25.0
School has "Fresh Tastes @ School" NSW Healthy School Canteen Strategy	87.5	12.5	-

SCHOOL-BASED INITIATIVES TO SUPPORT PRIMARY SCHOOL DELIVERY OF HEALTHY EATING AND PHYSICAL ACTIVITY PROGRAMS

In 2012, the NSW Healthy Children Initiative (HCI) was established under the auspices of the former National Partnership Agreement on Preventive Health to support implementation of a range of healthy lifestyle programs in childhood settings. Many of the programs were designed in recent years and were joint initiatives of the NSW Ministry of Health, NSW Department of Education and Communities, and the Heart Foundation. They are currently delivered as part of the NSW Government Healthy Eating and Active Living Strategy.

Local Health Districts provide support for the *Live Life Well @ School* program via site visits, phone calls and email follow up. The Health Kids website (http://www.healthykids.nsw.gov.au), a partnership between the Heart Foundation NSW, NSW Ministry of Health, Department of Education and the Office of Sport, provides information about healthy lifestyle programs for children.

NSW SCHOOL-BASED HEALTHY EATING AND PHYSICAL ACTIVITY PROGRAMS

Live Life Well @ School is a collaborative initiative between NSW Ministry of Health, the NSW Department of Education and Communities, Catholic and independent school sectors, delivered in all NSW primary schools. The school-based program aims to enhance teachers' knowledge, skills and confidence in teaching nutrition and physical activity (including fundamental movement skills) as a part of the K-6 Personal development, Health and Physical Activity (PDHPE) syllabus. The program utilises a whole of school approach consistent with classroom teaching and school policies, and encourages community links.

Crunch&Sip® encourages schools to provide a set break as part of the school day specifically for children to eat some fruit or salad vegetables and drink water in the classroom. Crunch&Sip® schools must demonstrate a commitment to teaching children about healthy eating, with a particular focus on fruit and vegetable consumption, as well as developing and implementing a fruit and water policy within their school. Children are expected to bring the fruit and/or vegetables they will eat as part of this break from home and therefore this Service also targets parents/carers.

Jump Rope for Heart is a Heart Foundation initiative which began in 1983 and is a fundraising and physical activity program based around skipping. It teaches school age children how to keep fit and healthy, all while having fun and raising vital funds for heart disease research and education.

Live Outside the Box is an interactive, fun, one-week activity for Stage 3 (Years 5-6) primary school students on how to maintain a healthy active lifestyle (developed by Northern Sydney and Central Coast Local Health Districts). Students are encouraged to reduce the amount of less healthy foods they consume and replace these with healthier alternatives; and to be physically active and turn off the TV, tablets and computer games.

Fresh Tastes @ School NSW Healthy School Canteen Strategy is a NSW Healthy School Canteen Strategy that came into effect at the start of the 2005 school year. Since then, it has been mandatory for all public schools in the state. The initiative is all about giving students across NSW a taste for healthy foods and encouraging them to make healthier food choices.

The NSW Premier's Sporting Challenge is a NSW Government initiative for public schools that aims to engage young people in sport and physical activity and encourage them to lead healthy, active lifestyles. It includes a range of programs with one common purpose: to have more students more active, more often. The program was launched in 2008, with 400 schools and 78,000 students taking part in the inaugural year. In 2013, over 247,000 students from more than 1,100 schools have been involved in the Challenge.

Q4:H2O is a one week project to promote healthy drinks to children and their parents/carers and to support teachers in getting healthy drink messages to families. Each student completes a card over the week, with parents to sign.

Active After Schools Community (re-branded 2015 as *Sporting Schools*) is a $100 million investment from the Australian Government to the Australian Sports Commission to help strengthen the connection between schools and sport so that all Australian children can get active and experience the joy of sport.

Table 13.17 shows the prevalence of programs currently in place in NSW urban and rural schools. Overall, most schools provided students with fruit, vegetable and water breaks, with just over half of the urban and three out of four rural schools reporting they were registered with the *Crunch&Sip*® program. A higher proportion of rural compared with urban schools had a school garden (62% v 36%) and were involved in *Live Life Well @ School* (75% v 58%) and the *Heart Foundation's Jump for Rope* (62% v 28%).

Table 13.17 School-based initiative offered in primary schools (%)

School-based program	Urban (n=36)			Rural (n=8)		
	Yes	No	No, but would like to	Yes	No	No, but would like to
Fruit, vegetable or water breaks	91.7	8.3		100.0	0	0
Registered Crunch&Sip® school (HCI)	58.3	27.8	13.9	75.0	25.0	0
School kitchen garden	36.1	52.8	11.1	62.5	12.5	25.0
Q4:H2O	22.2	66.7	11.1	12.5	50.0	37.5
Heart Foundation's Jump Rope for Heart	27.8	63.9	8.3	62.5	25.0	12.5
NSW Premier's Sporting Challenge	50.0	38.9	11.1	50.0	37.5	12.5
Live Outside the Box	16.7	69.4	13.9	-	62.5	37.5
Live Life Well @ School initiatives (HCI)	58.3	33.3	8.3	75.0	25.0	0
Active After Schools Community*	44.4	50.0	5.6	25.0	75.0	0
Outside of School Hours (OOSH) programs	63.9	33.3	2.8	50.0	50.0	

*HCI = Healthy Children's Initiative programs; * Rebranded in 2015 as Sporting Schools*

P&C AND FUNDRAISING

Schools were also asked to report Parent and Citizens (P&C) activities. Table 13.18 shows that almost all schools have an active P&C that acquires funds primarily through fundraising activities. Approximately half of the schools are dependent on fundraising activities to pay for outdoor upgrades, with 61% of urban and 87% of rural P&Cs actively involved in fundraising for play spaces and sport programs. A higher proportion of rural P&Cs had a strong influence/interest in their school's physical activity and nutrition policies (87% v 39%) than urban P&Cs.

Table 13.18 Primary school P&C activities (%)

P&C activities	Urban (n=36)		Rural (n=8)	
	Yes	No	Yes	No
Does your school have an active P&C	94.4	5.6	100.0	-
Is the school dependent on fundraising (or external funds) to pay for upgrades to outdoor (play) spaces, such as gardens, play equipment, shade cloths, etc.	63.9	36.1	50.0	50.0
Is the school dependent on fundraising to pay for specialist sport programs or dedicated PE teachers	30.6	69.4	12.5	87.5
Is the P&C actively involved in fundraising for play spaces and sport programs	61.1	38.9	87.5	12.5
Does the P&C have a strong influence/interest in outdoor, physical activity & nutrition policies	38.9	61.1	87.5	12.5
Does the P&C acquire their funds mainly through donations	25.0	75.0	-	100.0
Does the P&C acquire their funds mainly through fundraising	91.7	8.3	100.0	-

SUMMARY: PRIMARY SCHOOLS (URBAN AND RURAL COMBINED)

While the findings are based on a small sample of NSW primary (3%) schools the information still provides seful evidence on the current facilities, practices and barriers within schools to deliver physical activity and healthy eating opportunities for children during school hours.

1. Facilities and equipment to promote physical activity

All participating primary schools reported having a playground and over 89% reported having playground markings and usable outdoor courts that were utilised by students most days of the week. Additionally, more than 85% of principals reported the school area had adequate green space for active play. Most principals indicated that sporting and physical activity equipment and facilities were available. Most principals(84%) encouraged students to use the equipment and facilities during recess and lunchtime, while a few schools 'usually' encouraged use before (18%) or after (14%) school hours. The majority of principals reported their facilities and equipment for sport and PE lessons were in good (in need of a little improvement) or excellent condition.

2. Delivery of sport and PE

Most schools(89%) reported delivering PE and sport lessons to students in all year groups each week. The median number of PE and sport lessons each week for all year groups was two. The median time schools allocated to sport and PE per week was 86-99 minutes for years K- 2, and 105 minutes for Years 3-6. Approximately 23-30% of urban schools did not provide sport to students in Years K-2, and approximately 10% did not provide sport to students in Years 4-6.

PE was delivered by generalist or relief from face-to-face teachers in four out of five schools and by specialist PDHPE teachers in 22% of urban and 13% of rural schools. In urban schools, sport was delivered mainly by generalist teachers (67%), with 11% by third party providers, and 11% by specialist PDHPE teachers. In rural schools, sport was delivered mostly by generalist teachers (75%).

3. Barriers and enablers of promoting physical activity to students

The most common barriers to promoting physical activity reported by principals were competing demands on curriculum time (52%) and the expertise of teachers (27%). Overall, one-fifth of schools indicated a lack of wet/hot weather facilities for student activity was a strong barrier, and this was more common for urban schools (25%) than rural (13%). Barriers, such as the design of girls' sport uniforms, students' cultural backgrounds and gender, did not apply to most schools.

The most common approaches principals used to promote students' physical activity included encouraging students to use sporting and physical activity equipment and facilities during school hours (84.1%) and encouraging students to be more active outside of school hours; although this was more widely considered by rural (88%), compared with urban (61%) schools. A higher proportion of rural (75%), compared with urban (44%) primary school principals permitted community organisations to use facilities for physical activity outside of school hours. The use of encouragement and/or merit awards to promote physical activity was more common in urban (67%) than rural (38%) primary schools.

4. School food environment

At least 97% of schools included healthy eating in the PDHPE scope and sequence and approximately 60% of schools included healthy eating in the School Plan. At least 94% of schools communicate the importance of healthy eating to parents and encourage the provision of healthy food and drinks to students for extra-curricular school activities. Two-thirds of urban (67%) and most rural (88%) schools promote and model healthy eating during school activities, and one-third of schools reported healthy fund-raising options (39%).

Most schools have a canteen (92% urban and 100% rural) and canteen manager (89%). One-third (38%) of rural and over half (56%) of urban schools addressed healthy canteen in the School Plan. Twice as many rural (88%), compared with urban (39%) schools complied with the *NSW Fresh Tastes @ School* Canteen Strategy.

5. School-based initiatives

Almost all schools offered students a fruit, vegetable and water break (93%). A higher proportion of rural, compared with urban, schools offered healthy eating and physical activity programs such as Crunch&Sip® (75% vs 58%), school garden (63% vs 36%), The Heart Foundations' Jump Rope for Heart (63% vs 28%), and *Live Life Well @ School* (75% vs 58%). A higher proportion of urban schools than rural schools offered after school activities such as *Active After Schools Community* (44% vs 25%) and Outside of School Hours (OOHS) programs (64 vs 50%).

6. P&C activities

All rural and 94% of urban schools had an active P&C. The majority of P&Cs (93.2%) were funded through fundraising activities and two-thirds of P&Cs were actively involved in fundraising activities for play spaces and sport programs. It was more common for P&Cs in rural schools (87.5%) than those at urban schools (38.9%) to have a strong influence or interest in the schools' outdoor physical activity and nutrition policies.

SECONDARY SCHOOLS

In total, principals from 54 secondary schools (urban = 41, rural = 13) completed the School Environment Questionnaire. These schools included the practice and participating schools in SPANS (response rate, 98%).

The median number of teachers employed in urban and rural schools was 79.0 [IQR: 64, 86.5] and 55.0 [IQR: 39, 70] respectively. All schools employed a specialist PDHPE teacher. Specialist PE teacher represented 10% and 9% of the total number of teachers employed at participating urban and rural schools, respectively.

Of the participating schools, one-third (n=16) were currently upgrading their facilities to provide physical activity opportunities for students (15 urban and 1 rural school).

In contrast to primary schools, there were fewer school-based healthy eating and physical activity programs in secondary school. This may reflect the fact that secondary schools employ specialist PDHPE teachers who, unlike generalist primary school teachers, have pre-service training in the delivery of sport and physical activity.

FACILITIES FOR PHYSICAL ACTIVITY, SPORT AND PHYSICAL EDUCATION IN SECONDARY SCHOOLS

Tables 13.19 and 13.20 show the proportion of facilities associated with physical activity which were present, available, and used before, after, and during breaks in urban and rural schools, respectively.

All secondary schools had a playground/quadrangle area, which was well-used by students during recess and lunchtime. Slightly more rural than urban high schools made playing fields outside the school available during breaks, and more rural students then used these spaces. Rural schools were also more likely to report making indoor spaces available to students during wet or hot weather.

Table 13.19 Presence, availability and use of facilities associated with physical activity in urban secondary schools (n=41) (%)

School facility	Present	If present, available during recess/lunch	If available during recess/lunch, frequency used by students		
			Rarely	1-3 days/week	4-5 days/week
Playground/quadrangle	100	97.6	9.8	4.9	85.4
Useable outdoor basketball/netball courts	97.6	82.9	19.5	9.8	70.7
Playing fields as part of the school grounds	90.2	82.9	22.0	7.3	70.7
Playing fields within reasonable walking distance	90.2	2.6	87.8	7.3	4.9
An indoor playing space during wet/hot weather	87.8	36.6	68.3	17.1	14.6
A bike path near/around the school	48.8	0	0	0	0
Adequate sporting equipment, such as balls & bats	100	63.4	39.0	24.4	36.6

Table 13.20 Presence, availability and use of facilities associated with physical activity in rural secondary schools (n=13) (%)

School facility	Present	If present, available during recess/lunch	If available during recess/lunch, frequency used by students		
			Rarely	1-3 days/week	4-5 days/week
Playground/quadrangle	100	100	0.0	0.0	100
Useable outdoor basketball/netball courts	92.3	91.7	23.1	7.7	69.2
Playing fields as part of the school grounds	92.3	84.6	15.4	7.7	76.9
Playing fields within reasonable walking distance	92.3	23.1	92.3	7.7	0.0
An indoor playing space during wet/hot weather	100	75.0	30.8	46.2	23.1
A bike path near/around the school	38.5	0	0	0	0
Adequate sporting equipment, such as balls & bats	100	69.2	30.8	0.0	69.2

Four out of five principals (urban = 80% and rural = 83%) reported their school has adequate green space for students to actively play.

Table 13.21 shows the majority of principals of rural and urban schools reported their school sport and PE facilities were good or excellent. Principals who rated their facilities as poor or fair and needing improvement were from the three lowest socio-economic quintiles. Similarly, principals who reported their equipment needed improvement were from the two lowest socio-economic quintiles.

Table 13.21 Adequacy of secondary school sports and PE facilities and equipment (%)

	Facilities		Equipment	
	Urban (n=41)	Rural (n=12)	Urban (n=41)	Rural (n=12)
Poor, in need of much improvement	7.3	0	0	0
Fair, in need of some improvement	19.5	25.0	12.2	33.3
Good, in need of little improvement	43.9	58.3	51.2	50.0
Excellent	29.3	16.7	36.6	16.7

In total, 34% of principals indicated they would consider funding improvements for sport and PE facilities and equipment. Of those, half (50%) had reported their sport and PE facilities were poor or fair, and half had reported their sport and PE facilities were good or excellent.

One third (33%) of principals who indicated they would seek funding to improve sport and PE equipment reported their school's sport and PE equipment was fair, while two thirds (66%) reported their equipment for sport and PE was good or excellent.

DELIVERY OF SPORT AND PE IN SECONDARY SCHOOLS

Frequency of sport and PE lessons in secondary schools

Table 13.22 shows the prevalence of the number of PE lessons per week delivered by urban and rural schools respectively. All schools delivered PE lessons, with the median three lessons per week in urban and two lessons per week in rural schools.

Table 13.23 shows the prevalence of the number of sport lessons per week delivered by urban and rural schools respectively. Not all schools delivered sport lessons to students. About half of the urban schools delivered sport lessons twice per week, while over half of Year 7-8 students (58%) and to two thirds of Year 9-10 students in rural schools received twice weekly sport lessons. The median number of sports lessons delivered in urban schools was two for Year 7-8 students and three for Year 9-10 students. Rural schools delivered three lessons per week for all years.

Table 13.22 Prevalence of the number of PE lessons delivered in urban (n=41) and rural (n=12) secondary schools (%)

Lessons per week (n)	Urban				Rural			
	Year 7	Year 8	Year 9	Year 10	Year 7	Year 8	Year 9	Year 10
1	36.6	36.6	39.0	48.8	41.7	33.3	50.0	41.7
2	41.5	46.3	41.5	31.7	25.0	33.3	16.7	25.0
3	17.1	14.6	14.6	17.1	33.3	25.0	25.0	25.0
4	4.9	2.4	4.9	2.4	-	8.3	8.3	8.3
Mean (SD)	2.9 (.9)	2.8 (.8)	2.8 (.8)	2.7 (.8)	2.9 (.9)	3.1 (1.0)	2.9 (1.1)	3 (1.0)
Median [IQR]	3 [2, 3]	3 [2, 3]	3 [2, 3]	3 [2, 3]	2 [2, 4]	2 [2, 4]	2 [2, 4]	2 [2, 4]

Table 13.23 Prevalence of the number of sport lessons delivered in urban (n=41) and rural (n=12) secondary schools (%)

Lessons per week (n)	Urban				Rural			
	Year 7	Year 8	Year 9	Year 10	Year 7	Year 8	Year 9	Year 10
None	17.1	12.2	7.3	7.3	8.3	8.3	8.3	8.3
1	34.1	39.0	41.5	41.5	33.3	33.3	25.0	25.0
2	46.3	46.3	43.9	48.8	58.3	58.3	66.7	66.7
3	2.4	2.4	7.3	2.4	-	-	-	-
Mean (SD)	2.3 (.8)	2.4 (.7)	2.5 (.7)	2.5 (.7)	2.5 (.8)	2.5 (.7)	2.6(.7)	2.6 (.7)
Median [IQR]	2 [2, 3]	2 [2, 3]	3 [2, 3]	3 [2, 3]	3 [2, 3]	3 [2, 3]	3 [2, 3]	3 [2, 3]

Duration of PE and sport lessons

Table 13.24 shows the prevalence of time per week allocated to PE and sport lessons by urban and rural secondary schools respectively. The majority of schools allocated up to 60 minutes each for PE lessons and sport lessons.

The median time allocated each week to PE lessons was 96 minutes for Years 7-9 and 83 minutes for Year 10. The median time allocated each week to sport lessons was 96 minutes for all years. Overall, the median time allocated to PE and sport lessons each week was 192 minutes for Years 7-9 and 191 minutes for Year 10.

Table 13.24 Prevalence of the duration of PE and sport lessons in urban and rural secondary schools (%)

Lesson duration (minutes)	Urban (n=41)				Rural (N=12)			
	PE Lessons							
	Year 7	Year 8	Year 9	Year 10	Year 7	Year 8	Year 9	Year 10
n	*41*	*41*	*41*	*41*	*12*	*12*	*12*	*12*
Up to 60	80.5	82.9	80.5	78.0	75.0	83.9	83.3	75.0
61-90	14.6	12.2	17.1	17.1	25.0	16.7	16.7	25.0
91+	4.9	4.9	2.4	4.9	-	-		
Sport lessons								
n	*34*	*36*	*38*	*38*	*11*	*11*	*11*	*11*
Up to 60	61.8	58.3	55.3	55.3	54.5	54.5	54.5	54.5
61-90	20.6	22.2	23.7	23.7	36.4	36.4	36.4	36.4
91+	17.6	19.4	21.1	21.1	9.1	9.1	9.1	9.1

Table 13.25 lists who is responsible for teaching PE and sport in secondary schools and Table13.26 shows the level of support for PE and sport in the school. In urban secondary schools, specialist PDHPE typically deliver PE (83%). Only 20% of specialist PDHPE teachers deliver sport, with almost half of sport delivered by generalist teachers from a range of other faculties. In rural secondary schools, half of PE is delivered by specialist PDHPE teachers and half by non-specialist PDHPE teachers from other Key Learning Areas (KLAs). Two-thirds of these schools use generalist teachers from a range of other faculties, rather than specialist PDHPE teachers, to deliver sport.

Table 13.25 Adults involved in the delivery of PE and sport in urban and rural secondary schools (%)

	Urban (n=41)		Rural (n=12)	
	PE	Sport	PE	Sport
Specialist PDHPE teachers only	82.9	19.5	50.0	-
PDHPE staff plus a few teachers from other KLAs	14.6	29.3	50.0	33.3
Generalist teachers from a range of other faculties	0	46.3	0	66.6
Parents	0	0	0	0
Outside sporting groups or external contractors	2.4	4.9	0	0

Approximately half (56%) of urban secondary school principals indicated support for sport was good (Table 13.26). The majority (83%) indicated support for PE in their school was fair, while approximately one in five principals indicated it was poor. Less than half (42%) the urban secondary schools principals indicated parental support was good. In contrast, the majority of rural secondary schools rated each of the support measurements as good.

Table 13.26 Level of school support for sport and PE in urban and rural secondary schools (%)

	Urban (n=41)			Rural (n=12)		
	Poor	Fair	Good	Poor	Fair	Good
Sport	4.9	39.0	56.1	0	25.0	75.0
PE	17.1	82.9	0	0	25.0	75.0
PE and sport by parents	4.9	53.7	41.5	0	33.3	66.7

PERCEIVED BARRIERS TO ENHANCING SKILL DEVELOPMENT, FITNESS AND PHYSICAL ACTIVITY

Figures 13.5 and 13.6 show there were differences between urban and rural secondary school principals' perceptions of barriers to enhancing students skill development, fitness and physical activity. Competing demands on curriculum time was a clear barrier, particularly for rural schools.

Principals of rural compared with urban secondary schools more frequently reported barriers, including the amount of equipment available (75% vs 32%), teacher expertise (67% vs 41%) and motivation/ attitude of members of staff to teach FMS or promote physical activity (75% vs 51%). In contrast, the cultural background of students and the design of girls' sports uniforms applied more to urban schools.

The prevalence of secondary schools reporting a lack of interest from students as a barrier to enhancing skill development, fitness and physical activity was high (rural, 92%; urban 71%). Similarly, the majority of schools reported that the level of school/home/community interaction sometimes or strongly applied as a barrier to student physical activity.

Figure 13.5 Prevalence of perceived barriers to enhance skill development, fitness and physical activity in urban secondary schools (n=41) (%)

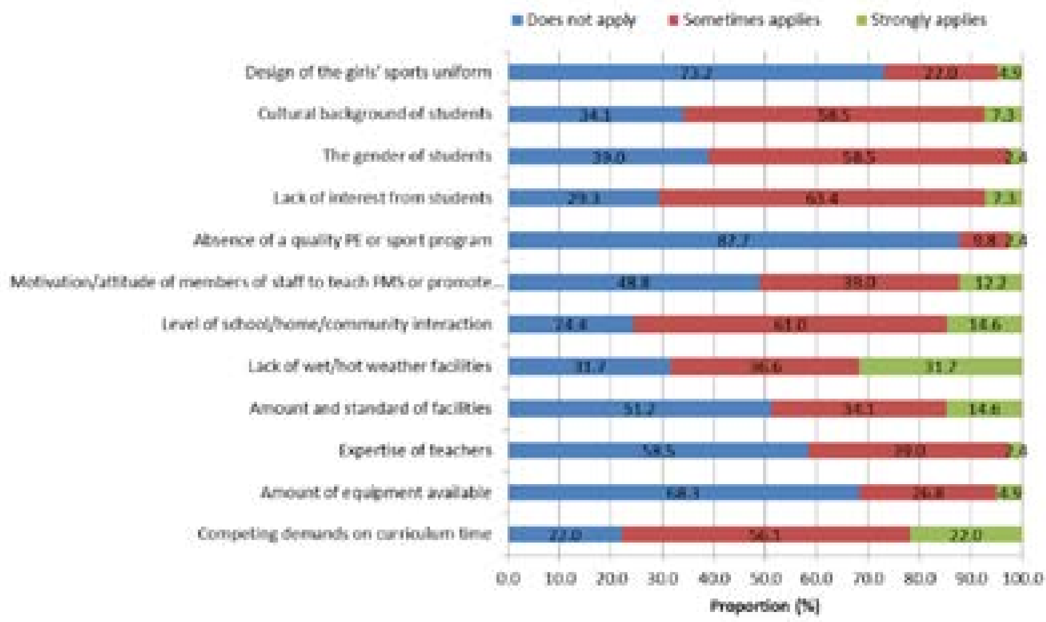
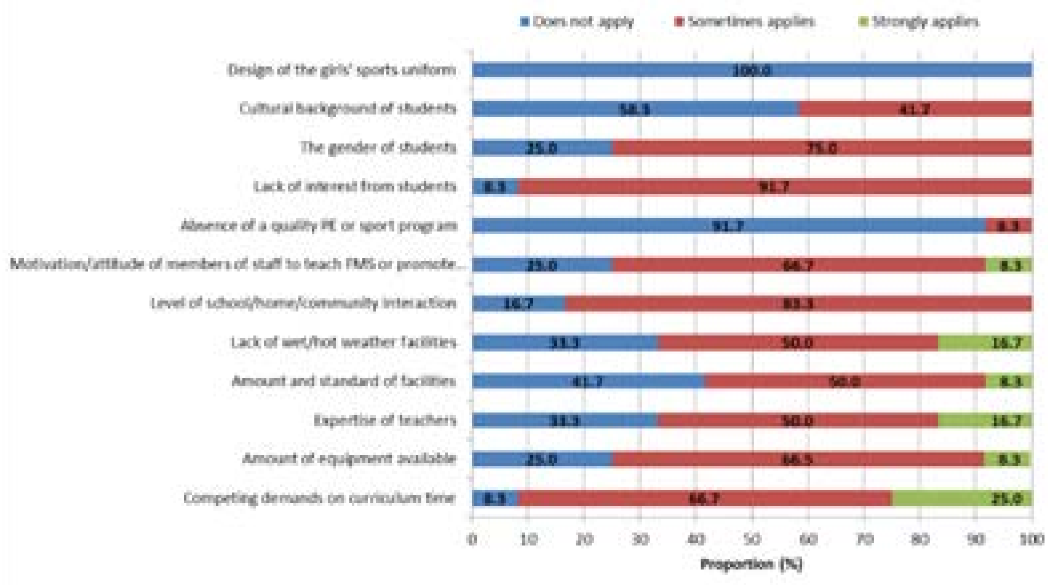


Figure 13.6 Prevalence of perceived barriers to enhance skill development, fitness and physical activity in rural secondary schools (n=12) (%)



SECONDARY SCHOOL APPROACHES TO PROMOTING PHYSICAL ACTIVITY

Figures 13.7 and 13.8 show there was little difference between the approaches used by principals of urban and rural secondary schools to promote student physical activity. All principals reported that physical activity was included in PDHPE scope and sequence. Over 90% of principals reported using encouragement or merit awards to promote physical activity among students. Approximately two-thirds of principals reported the school did not use remedial motor skill programs to promote physical activity.

A slightly higher proportion of rural compared with urban secondary school principals reported encouraging students to walk or cycle to school, use equipment and facilities after school, and permitted community organisations to use facilities for physical activity outside school hours.

Figure 13.7 Potential approaches schools can use to promote students' physical activity in urban secondary schools (n=41) (%)

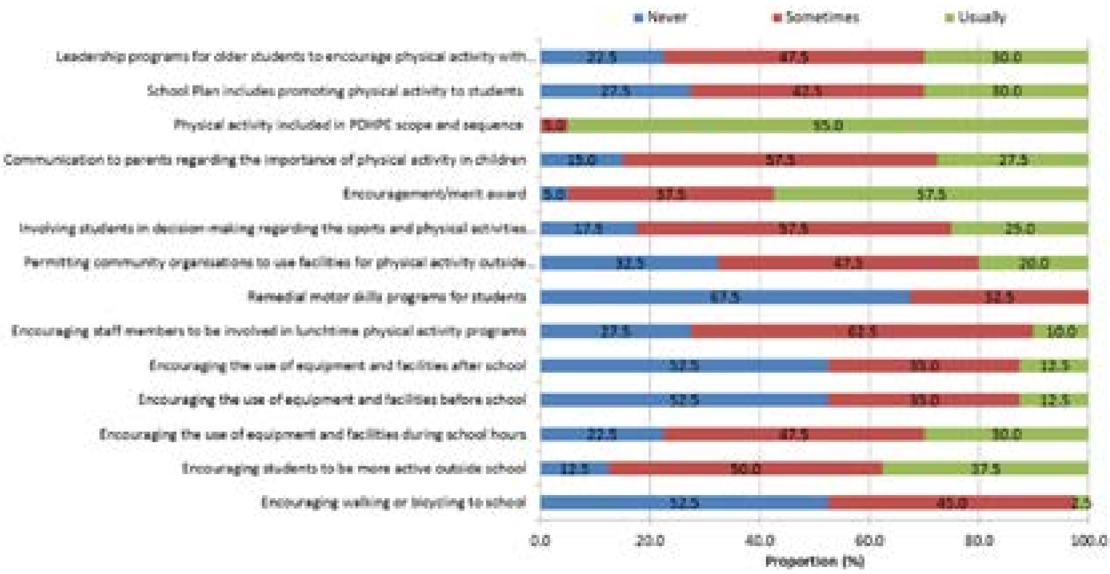
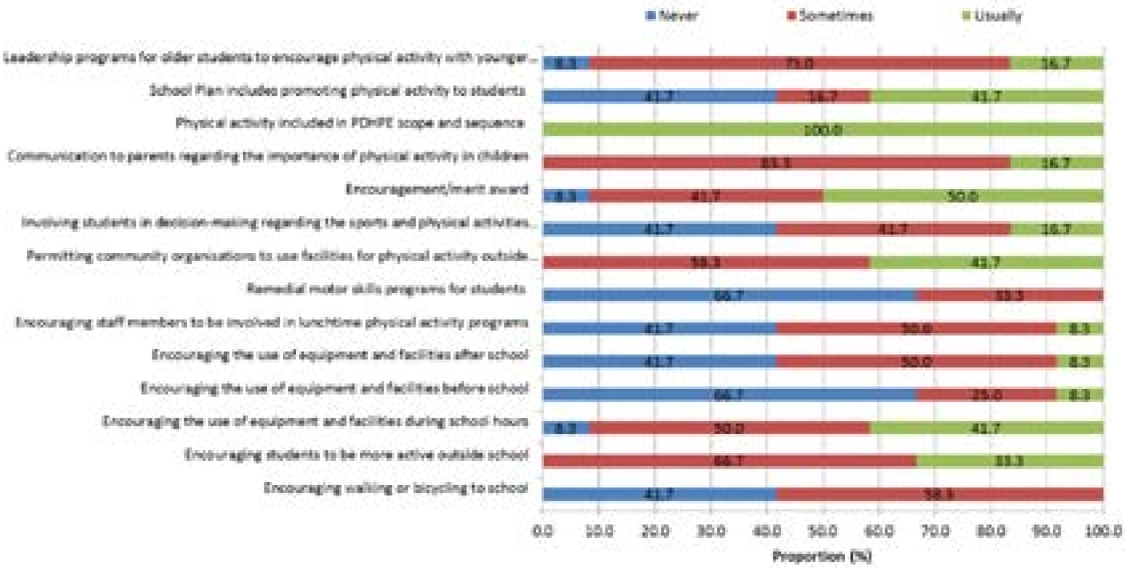


Figure 13.8 Potential approaches schools can use to promote students' physical activity in rural secondary schools (n=12) (%)



SECONDARY SCHOOL FOOD ENVIRONMENT

Tables 13.27 and 13.28 show a range of practices that school principals can undertake to promote and support healthy eating within the student and school communities for urban and rural secondary schools, respectively. Almost all secondary schools included healthy eating in their PDHPE scope and sequence and around two-thirds of principals reported they encouraged the provision of healthy food and drinks to students for activities including excursions, camps, sport carnivals and other school functions.

While half of the principals reported they did not have healthy fundraising options, approximately 20% of schools indicated they would like to have them. Overall, the responses indicate that while schools are addressing factors in their food environments to promote healthy eating, there is room for greater support, with schools reporting that there were activities they would like to implement, but had not yet done so.

Table 13.27 School food environment in urban secondary schools (n=40) (%)

School food environment	Yes	No	No, but would like to
Include healthy eating in PDHPE scope and sequence	97.5	2.5	-
Address healthy eating in the School Plan	30.0	37.5	32.5
Have healthy fundraising options	27.5	50.0	22.5
Encourage the provision of healthy food and drinks to students for activities including excursions, camps, sport carnivals and other school functions	62.5	15.0	22.5
Promote and model healthy eating during school activities involving the wider community, including school fetes and school functions	40.0	35.0	25.0
Communicate to parents the importance of healthy eating	25.0	40.0	35.0

Table 13.28 School food environment in rural secondary schools (n=12) (%)

School food environment	Yes	No	No, but would like to
Include healthy eating in PDHPE scope and sequence	100	-	-
Address healthy eating in the School Plan	33.3	16.7	50.0
Have healthy fundraising options	33.3	50.0	16.7
Encourage the provision of healthy food and drinks to students for activities including excursions, camps, sport carnivals and other school functions	66.7	8.3	25.0
Promote and model healthy eating during school activities involving the wider community, including school fetes and school functions	50.0	25.0	25.0
Communicate to parents the importance of healthy eating	50.0	25.0	25.0

SECONDARY SCHOOL CANTEEN PRACTICES

Tables 13.29 and 13.30 show the proportion of secondary urban and rural schools, respectively, with a canteen, and practices associated with school canteens. Over 90% of secondary schools had a canteen and a canteen manager. Thirty per cent of urban secondary schools and one-quarter of rural secondary schools did not address healthy canteens in the School Plan, but approximately 60% of principals reported having a Healthy School Canteen Strategy (58% rural, 68% urban).

Table 13.29 Urban secondary school canteen practices (n=40) (%)

	Yes	No	No, but would like to
School has a canteen	97.6	2.4	-
School has a canteen manager	97.6	2.4	-
School has healthy canteens in the School Plan	47.5	30.0	22.5
School has a healthy school canteen strategy	67.5	12.5	20.0

Table 13.30 Rural secondary school canteen practices (n=12) (%)

	Yes	No	No, but would like to
School has a canteen	92.3	7.7	-
School has a canteen manager	92.3	7.7	-
School has healthy canteens in the School Plan	58.3	25.0	16.7
School has a healthy school canteen strategy	58.3	33.3	8.3

P&C AND FUNDRAISING

Principals were asked to report P&C activities. Table 13.31 shows that at least 90% of secondary schools have an active P&C. A higher proportion of urban compared to rural (42% v 8%) P&Cs acquired their funds mainly through donations. However, a higher proportion of rural compared to urban (75% v 60%) P&Cs acquired their funds mainly through fundraising. Approximately half of the schools are dependent on funds from fundraising to pay for the upgrade of outdoor play spaces.

Table 13.31 Secondary school P&C activities (%)

P&C activities	Urban (n=40)		Rural (n=12)	
	Yes	No	Yes	No
Does your school have an active P&C	90	10	91.7	8.3
Is the school dependent on fundraising (or external funds) to pay for upgrades to outdoor (play) spaces, such as gardens, play equipment and shade cloths	50.0	50.0	41.7	58.3
Is the school dependent on fundraising to pay for specialist sport programs or dedicated PE teachers	5.0	95.0	8.3	91.7
Is the P&C actively involved in fundraising for play spaces/sport programs	30.0	70.0	25.0	75.0
Does the P&C have a strong influence/interest in outdoor, physical activity and nutrition policies	30.0	70.0	33.3	66.7
Does the P&C acquire their funds mainly through donations	42.5	57.5	8.3	91.7
Does the P&C acquire their funds mainly through fundraising	60.0	40.0	75.0	25.0

SUMMARY: SECONDARY SCHOOLS (URBAN AND RURAL COMBINED)

While the findings are based on a small sample of NSW secondary (6%) schools, the information still provides useful evidence on the current facilities, practices and barriers within schools to deliver physical activity and healthy eating opportunities for children during school hours.

1. Facilities and equipment to promote physical activity

All principals reported their school had a playground and adequate sporting equipment, and over 90% reported having usable outdoor courts, playing fields either at school or within walking distance, and an indoor space/hall. These facilities were available to students during recess and lunchtime; however, only approximately two-thirds of schools made sporting equipment available to students during breaks. It was more common for principals of rural schools (100%) than urban schools (87.8%) to report availability of indoor spaces to students for physical activity. Four out of five (81%) principals reported their school had adequate green space.

More urban (68%), compared with rural (31%) schools reported rarely using indoor playing areas. It was more common for rural students (69%) than urban (63%) to use sporting equipment during recess and lunch.

2. Delivery of sport and PE

All schools delivered PE lessons, with the median of three lessons per week in urban and two lessons per week in rural schools. Not all schools delivered sport lessons: approximately 9% of Principals reported their school did not provide sport lessons. Almost half of the urban schools delivered sport lessons twice per week to students, while rural schools usually provided three lessons per week. Overall, the median time allocated to PE and sport lessons each week was 192 minutes for Years 7-9 and 191 minutes for Year 10.

3. Barriers and enablers of promoting physical activity to students

The most common barriers to promoting physical activity to students reported by principals included competing demands on curriculum time (81%), level of school/home/community interaction (77%), lack of student interest (76%), lack of wet/hot weather facilities (72%) and motivation of staff to promote physical activity (57%).

Almost all schools (96%) included physical activity in the PDHPE scope and sequence, but less than one-third (33%) included the promotion of physical activity to students in their School Plan. The most common usual approaches principals reported to promoting students' physical activity included encouragement or merit awards (>90%), encouraging students to be more active outside of school (37%), and encouraging students to use physical activity equipment and facilities during school (33%).

4. School food environment

Principals in almost all schools (98%) reported healthy eating was included in the PDHPE scope and sequence, however less than one-third (31%) of schools included healthy eating in the School Plan. One quarter of urban and 50% of rural schools communicated to parents the importance of healthy eating and two-thirds (64%) of schools encouraged the provision of healthy foods and drinks to students for school activities. Two in five schools promoted and modelled healthy eating during school activities, and less than one-third (29%) had healthy fundraising options.

Almost all schools had a canteen; less than half (48%) of urban school canteens had a healthy canteen in the School Plan, while more than half (58%) of rural school canteens had healthy canteens in the School Plan. Approximately two-thirds of school principals reported implementing a healthy canteen strategy.

5. P&C activities

Most (90%) schools had a P&C and 60% of urban and 75% or rural schools' P&Cs were funded through fundraising activities. Two in five urban school P&Cs acquired funds through donations compared with 8% of rural schools. Less than-one third of P&Cs were actively involved in fundraising for sports programs (29%) or had a strong influence over the schools physical activity and nutrition policies (31%).

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APPENDIX - QUESTIONNAIRE FOR PARENTS OF CHILDREN IN KINDERGARTEN, YEARS 2 AND 4

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SCHOOLS PHYSICAL ACTIVITY AND NUTRITION SURVEY 2015

QUESTIONNAIRE FOR PARENTS OF CHILDREN IN KINDERGARTEN, YEARS 2 AND 4

INTRODUCTION

Thank you for helping us with our important research.

This questionnaire will take about 15 to 20 minutes to complete and will help us understand more about the health of young people.

The answers are confidential and will be seen **only** by the survey team. No-one else has access to your information.

This questionnaire is voluntary and you can withdraw at any time.

COMPLETION GUIDELINES

Please answer each question the best you can. Please use a **BLACK** or **DARK BLUE** pen.

Please shade the circles completely (do not tick or cross) ●

Write clearly within the boxes A B C 1 2 3

Write clearly within each space PLEASE WRITE IN CAPITAL LETTERS

If you make a mistake, or want to change any of your shaded responses, please place a cross through the incorrect response and then shade the correct response ●

For written responses, please cross out your incorrect response and write your new response just above or below the one you have crossed out.

~~INCORRECT~~

CORRECT

BIOGRAPHICAL DETAILS

Your child's first name:

Your child's surname:

What year is your child in? ○ Kindy ○ Year 2 ○ Year 4

What is the name of your child's school?

School ID: **Office Use Only**

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DEMOGRAPHICS

THINK ABOUT YOUR CHILD WHO IS PARTICIPATING IN THIS STUDY

1. **What is your child's birth date?**
   ☐☐ / ☐☐ / ☐☐☐☐
   Day Month Year

2. **Is your child a boy or a girl?**
   ○ Boy ○ Girl

3. **What language does your child speak most at home?**
   ○ English ○ Another language (please write it below)

4. **Is your child of Aboriginal and/or Torres Strait Islander origin?**
   ○ Yes ○ No ○ Don't know

5. **What is the suburb where your child usually lives?**

6. **What is the postcode where your child usually lives?** ☐☐☐☐

PLEASE DO NOT WRITE IN THIS BOX

Height (cm)	Weight (kg)	Waist (cm)	MFT	SBJ
☐☐☐.☐	☐☐☐.☐	☐☐☐.☐	☐☐ ☐☐	☐☐☐.☐

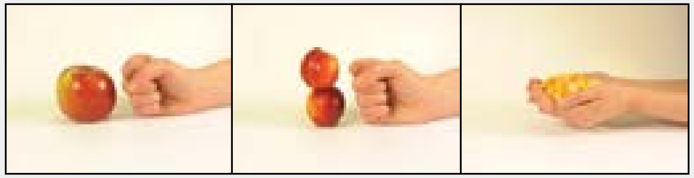
THE FOODS YOUR CHILD EATS

PLEASE SHADE ONLY ONE CIRCLE FOR EACH QUESTION

7. **How many serves of vegetables does your child usually eat each day?**
   (The picture shows a serve of vegetables. A serve is also = ½ cup cooked vegetables, or 1 cup of salad vegetables. Include fresh, dried, frozen and tinned vegetables)

○ My child doesn't eat vegetables
○ Less than 1 serve
○ 1 serve
○ 2 serves
○ 3 serves
○ 4 serves
○ 5 serves
○ 6 or more serves

8. **How many serves of fruit does your child usually eat each day?**
   (The picture shows a serve of fruit. A serve is also = 1 cup of diced pieces. Include fresh, dried, frozen and tinned fruit)



○ My child doesn't eat fruit
○ Less than 1 serve
○ 1 serve
○ 2 serves
○ 3 serves
○ 4 serves
○ 5 serves
○ 6 or more serves

9. **Please indicate how often your child usually eats the following foods.**

FOODS	Never or Rarely	PER WEEK: 1 to 2 times a WEEK	PER WEEK: 3 to 4 times a WEEK	PER WEEK: 5 to 6 times a WEEK	PER DAY: Once a DAY	PER DAY: 2 or more times a DAY
Meat products such as sausages, frankfurters, devon, ham, hamburgers or chicken nuggets	○	○	○	○	○	○
Red meat, such as beef or lamb. Include all steaks, chops, roasts, mince, stir fries and casseroles. Do not include pork or chicken	○	○	○	○	○	○
Hot chips, French fries, wedges or fried potatoes	○	○	○	○	○	○
Potato crisps or other salty snacks (such as Twisties or corn chips)	○	○	○	○	○	○
Snack foods, such as sweet and savoury biscuits, cakes, donuts, or muesli bars	○	○	○	○	○	○
Confectionery, such as lollies and chocolate	○	○	○	○	○	○
Ice-cream or ice blocks	○	○	○	○	○	○

10. **How often does your child?**

FOODS	Never or Rarely	PER WEEK: Less than once a WEEK	PER WEEK: About 1 to 2 times a WEEK	PER WEEK: About 3 to 4 times a WEEK	PER WEEK: About 5 to 6 times a WEEK	Every day
Usually have takeaway meals or snacks from places like McDonald's, Hungry Jack's, Pizza Hut, KFC, Red Rooster or local takeaway food places	○	○	○	○	○	○
Usually have something for breakfast	○	○	○	○	○	○
Usually eat dinner in front of the television	○	○	○	○	○	○

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11. **Please indicate how many cups of the following drinks your child usually consumes.**
(These pictures will help you answer the drink questions)

DRINKS	Never or Rarely	CUPS PER WEEK: 1 cup or less a WEEK	CUPS PER WEEK: 2 to 4 cups a WEEK	CUPS PER WEEK: 5 to 6 cups a WEEK	CUPS PER DAY: 1 cup a DAY	CUPS PER DAY: 1½ cups a DAY	CUPS PER DAY: 2 or more cups a DAY
Fruit juice 1 cup = 250mls; 1 large popper	○	○	○	○	○	○	○
Plain water (tap or bottled) 1 cup = 250mls; 600ml bottle = 2½ cups	○	○	○	○	○	○	○
Flavoured water (eg Smart Water, Vitamin Water) 600ml bottle = 2½ cups	○	○	○	○	○	○	○
Milk (Include all types of milk, including flavoured milk and milk on cereal) 1 cup = 250mls	○	○	○	○	○	○	○
Soft drink or cordials 1 cup = 250ml; 375ml can of soft drink = 1½ cups; 600ml bottle = 2½ cups	○	○	○	○	○	○	○
'Diet' soft drink or diet cordial, such as Diet Coke or Sprite or Coke Zero 1 cup = 250ml; 375ml can of soft drink = 1½ cups; 600ml bottle = 2½ cups	○	○	○	○	○	○	○
Sports drinks (eg Gatorade, Powerade) 600ml bottle = 2½ cups	○	○	○	○	○	○	○

12. **Please indicate how often your child usually drinks Energy drinks (eg Mother, V, Red Bull).**

ENERGY DRINKS	Never or Rarely	PER WEEK: 1 or less times a WEEK	PER WEEK: 2 to 4 times a WEEK	PER WEEK: 5 to 6 times a WEEK	PER DAY: Once a DAY	PER DAY: 2 or more times a DAY
Small can/bottle (less than 500mls)	○	○	○	○	○	○
Big can/bottle (500mls or more)	○	○	○	○	○	○

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13. **What type of milk does your child usually drink?**
- ○ My child doesn't drink milk
- ○ Whole
- ○ Low/reduced fat
- ○ Skim
- ○ Soy
- ○ Other type milk (such as rice, goat, evaporated or sweetened condensed)
- ○ Don't know

14. **On school days, how often does your child buy lunch from the SCHOOL CANTEEN?**
- ○ My child's school doesn't have a canteen
- ○ My child doesn't buy lunch from the school canteen
- ○ 1 time per week
- ○ 2 times per week
- ○ 3 times per week
- ○ 4 times per week
- ○ 5 times per week

15. **What kind of drink does your child usually buy from the SCHOOL CANTEEN?**
(If they buy more than one type of drink, choose the one they buy most often)
- ○ My child's school doesn't have a canteen
- ○ My child doesn't buy drinks from the canteen
- ○ Fruit juices
- ○ Sport drinks
- ○ Milk (plain or flavoured)
- ○ Plain water
- ○ Flavoured water
- ○ Regular soft drink
- ○ 'Diet' or 'low joule' soft drink

16. **What kind of drink does your child usually buy from the SCHOOL VENDING MACHINE?**
(If they buy more than one type of drink, choose the one they buy most often)
- ○ My child's school doesn't have a vending machine
- ○ My child doesn't buy drinks from the vending machine
- ○ Fruit juices
- ○ Sport drinks
- ○ Milk (plain or flavoured)
- ○ Plain water
- ○ Flavoured water
- ○ Regular soft drink
- ○ 'Diet' or 'low joule' soft drink

PHYSICAL ACTIVITY

17. **Over the past 7 days, on how many days was your child engaged in moderate to vigorous physical activity for at least 60 minutes (this can be accumulated over the entire day, for example in bouts of 10 minutes) each day?**

Moderate to vigorous activity is any activity that increases the heart rate and gets you out of breath some of the time

○ No days ○ 1 day ○ 2 days ○ 3 days ○ 4 days ○ 5 days ○ 6 days ○ 7 days

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SCHOOL TRAVEL

18. How does your child travel TO school in a usual week? (Please indicate the number of days your child uses each type of transport and the time spent on that type of transport).

TRANSPORT	On how many days a week does your child use this type of transport to go to school? 1 Day	2 Days	3 Days	4 Days	5 Days	How long does this transport take on the way to school? Hours	Minutes
Bus	○	○	○	○	○		
Car	○	○	○	○	○		
Cycle	○	○	○	○	○		
Ferry/boat	○	○	○	○	○		
Skateboard/scooter	○	○	○	○	○		
Train	○	○	○	○	○		
Walk	○	○	○	○	○		

19. How does your child travel home FROM school in a usual week? (Please indicate the number of days your child uses each type of transport and the time spent on that type of transport).

TRANSPORT	On how many days a week does your child use this type of transport to go home from school? 1 Day	2 Days	3 Days	4 Days	5 Days	How long does this transport take on the way home from school? Hours	Minutes
Bus	○	○	○	○	○		
Car	○	○	○	○	○		
Cycle	○	○	○	○	○		
Ferry/boat	○	○	○	○	○		
Skateboard/scooter	○	○	○	○	○		
Train	○	○	○	○	○		
Walk	○	○	○	○	○		

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SEDENTARY ACTIVITIES

NOW, SOME QUESTIONS ABOUT ACTIVITIES YOUR CHILD MAY DO SITTING DOWN

Overall, your child has about 8 hours of free time before and after school, some of which is spent sitting. They may do multiple activities at the same time (play with smart phone in front of the TV), so please estimate how much time was spent on *each* activity within the total time spent doing both.

20. Think about a normal *school week*, and write down how long your child spends doing the following activities before and after school each day. Leave blank if your child does not do that activity.

	Monday Hours	Monday Minutes	Tuesday Hours	Tuesday Minutes	Wednesday Hours	Wednesday Minutes	Thursday Hours	Thursday Minutes	Friday Hours	Friday Minutes
Watching TV										
Watching videos/DVDs										
Using the computer for fun										
Playing on smart phone or iPad										
Playing computer or video games (Nintendo, Xbox, PlayStation, Wii)										
Using the computer for doing homework										
Doing homework not on the computer										
Reading for fun										
Being tutored										
Travel (car/bus/train)										
Doing crafts or hobbies										
Sitting around (chatting with friends/on the phone/chilling)										
Playing/practising a musical instrument										

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Overall, your child has about 16 hours of free time on a weekend day, some of which is spent sitting. They may do multiple activities at the same time (play with smart phone in front of the TV), so please estimate how much time was spent on *each* activity within the total time spent doing both.

21. Now think about a normal *weekend*, and write down how long your child spends doing the following activities each weekend day. Leave blank if your child does not do that activity.

	Saturday		Sunday	
	Hours	Minutes	Hours	Minutes
Watching TV				
Watching videos/DVDs				
Using the computer for fun				
Playing on smart phone or iPad				
Playing computer or video games (Nintendo, Xbox, PlayStation, Wii)				
Using the computer for doing homework				
Doing homework not on the computer				
Reading for fun				
Being tutored				
Travel (car/bus/train)				
Doing crafts or hobbies				
Sitting around (chatting with friends/on the phone/chilling)				
Playing/practising a musical instrument				
Going to church or Saturday school				

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FAMILY HABITS

22. How often do you offer sweets (lollies, ice cream, cake, biscuits) to your child as a reward for good behaviour?
○ Usually ○ Sometimes ○ Rarely/Never

23. At home, does your child snack (chips, biscuits, muesli bars etc) and/or drink soft drinks whenever they like?
○ Yes ○ No, they have to ask me first

24. How often are soft drinks available in your home?
○ Usually ○ Sometimes ○ Rarely/Never

25. Does your child have a television in their bedroom?
○ Yes ○ No

26. How often do you set limits/rules on child's screen time eg TV, DVDs, electronic games, tablets (iPad, mobile, smart phone etc)?
○ Usually ○ Sometimes ○ Rarely/Never

27. Does your child use electronic media (eg mobile or smart phone, iPad, computer) during sleep time?
○ Usually ○ Sometimes ○ Rarely/Never

28. Do you consider your child to be:
○ Very underweight ○ Slightly underweight ○ About the right weight
○ Slightly overweight ○ Very overweight

YOUR CHILD'S TEETH

29. During the past 12 months, how often has your child had toothache?
○ Very often ○ Often ○ Sometimes ○ Hardly ever ○ Rarely/Never

30. How often has your child had to avoid eating some foods because of problems with their teeth or mouth during the past 12 months?
○ Very often ○ Often ○ Sometimes ○ Hardly ever ○ Rarely/Never

31. In the past week, how many times did your child brush their teeth?
○ Less than once a day ○ Once a day ○ Twice a day or more than twice a day

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YOUR CHILD'S SLEEP TIME

32. What time does your child usually go to bed on a school night?

[ ][ ] : [ ][ ] PM

33. What time does your child usually get up on a school day?

[ ][ ] : [ ][ ] AM

34. What time does your child usually go to bed on a non-school night?

[ ][ ] : [ ][ ] PM

35. What time does your child usually get up on a non-school day?

[ ][ ] : [ ][ ] AM

DO YOU KNOW

36. How many minutes of physical activity is it recommended that school aged children do each day?

[ ][ ] minutes **OR** ○ Don't know

37. Up to how many hours of television, video, DVD or computer games is it recommended that school aged children watch each day?

[ ][ ] hours **OR** ○ Don't know

THANK YOU FOR PARTICIPATING IN THIS SURVEY
Please place it back in the envelope, with the consent form, seal it and return it to your child's teacher

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FUNDAMENTAL MOVEMENT SKILLS ASSESSMENT SHEET (YEAR 2 AND 4)

PARENTS - DO NOT COMPLETE THIS SECTION
THE FOLLOWING SECTION IS DONE AT SCHOOL

CATCH: 'Catch the bean bag with two hands'

○ Not attempted
1. ○ Eyes focused on the object throughout the catch
2. ○ Feet move to place the body in line with the object
3. ○ Hands move to meet the object
4. ○ Hands and fingers relaxed and slightly cupped to catch the object
5. ○ Catch and control object with hands only (well-timed closure)
6. ○ Elbows bend to absorb the force of the object

KICK (stationary ball): 'Run up to the ball and kick it as hard as you can'

○ Not attempted
1. ○ Eyes focused on the ball throughout the kick
2. ○ Forward and sideward swing of arm opposite kicking
3. ○ Non-kicking foot placed beside the ball
4. ○ Bend knee of kicking leg at least 90 degrees during the back swing
5. ○ Contact ball with top of the foot (a "shoelace" kick) or instep
6. ○ Kicking leg follows through high towards the target area

OVERARM THROW: 'Throw the object as far as you can' Student may take 2-3 steps

○ Not attempted
1. ○ Eyes focused on target throughout the throw
2. ○ Stands side-on to target area
3. ○ Throwing arm moves in a downward and backward arc
4. ○ Step towards target area with foot opposite throwing arm
5. ○ Hips then shoulders rotate forward
6. ○ Throwing arm follows through down and across the body

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SPRINT RUN:	'Run as fast as you can from one end to another'
	○ Not attempted
1.	○ Lands on ball of the foot
2.	○ Non-support knee bent at least 90 degrees during the recovery phase
3.	○ High knee lift, thigh almost parallel to the ground
4.	○ Head and trunk stable, eyes focused forward
5.	○ Elbows bent at 90 degrees
6.	○ Arms drive forward and back in opposition to legs

VERTICAL JUMP:	'Jump as high as you can'
	○ Not attempted
1.	○ Eyes focused forward or upward throughout the jump
2.	○ Crouch with knees bent and arms behind the body
3.	○ Forceful forward and upward swing of the arms
4.	○ Legs straighten in the air
5.	○ Lands on balls of the feet and bends knees to absorb landing
6.	○ Controlled landing with no more than one step in any direction

SIDE GALLOP:	'Side gallop from one end to the other and return'
	○ Not attempted
1.	○ Smooth rhythmical movement
2.	○ Brief period where both feet are off the ground
3.	○ Weight on the balls of the feet
4.	○ Hips and shoulders point to the front
5.	○ Head stable, eyes focused forward or in the direction of travel

LEAP:	'Run up to the marker and leap as far as you can'
	○ Not attempted
1.	○ Eyes focused forward throughout the leap
2.	○ Knee of take-off leg bends
3.	○ Legs straighten during flight
4.	○ Arms held in opposition to the legs
5.	○ Trunk leans slightly forward
6.	○ Lands on ball of the foot and bends knee to absorb landing

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APPENDIX – YEAR 6 QUESTIONNAIRE

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THE UNIVERSITY OF SYDNEY

NSW GOVERNMENT | Health

SCHOOLS PHYSICAL ACTIVITY AND NUTRITION SURVEY 2015

YEAR 6 QUESTIONNAIRE

INTRODUCTION

Thank you for helping us today.

Many students throughout NSW are helping us by completing this questionnaire which will help us understand more about the health of young people.

The answers are confidential and will be looked at by the survey team and no-one else. No-one at your school will see your answers.

This questionnaire is voluntary and you can withdraw at any time.

COMPLETION GUIDELINES

Please answer each question the best you can. Please use a **BLACK** or **DARK BLUE** pen.

Please shade the circles completely (do not tick or cross)	Write clearly within the boxes	Write clearly within each space
●	A B C 1 2 3	PLEASE WRITE IN CAPITAL LETTERS

If you make a mistake, or want to change any of your shaded responses, please place a cross through the incorrect response and then shade the correct response ●

For written responses, please cross out your incorrect response and write your new response just above or below the one you have crossed out.

~~I N C O R R E C T~~

CORRECT

BIOGRAPHICAL DETAILS

First name:

Surname:

School:

School ID: Office Use Only

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DEMOGRAPHICS

FIRST, A FEW QUESTIONS ABOUT YOU

1. What is your date of birth?

☐☐ / ☐☐ / ☐☐☐☐

Day Month Year

2. Are you a boy or a girl?

○ Boy ○ Girl

3. What language do you speak most at home?

○ English ○ Another language (please write it below)

4. Are you of Aboriginal and/or Torres Strait Islander origin?

○ Yes ○ No ○ Don't know

5. What suburb do you usually live in?

6. What is the postcode where you usually live?

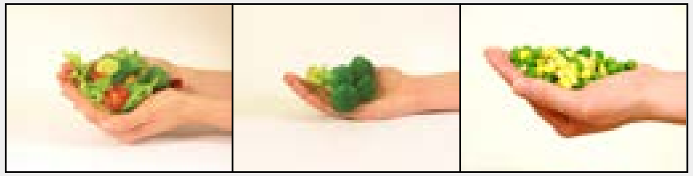
PLEASE DO NOT WRITE IN THIS BOX

Height (cm)	Weight (kg)	Waist (cm)	MFT	SBJ

THE FOODS YOU EAT

PLEASE SHADE ONLY ONE CIRCLE FOR EACH QUESTION

7. How many serves of vegetables do you usually eat each day?
(The picture shows a serve of vegetables. A serve is also = ½ cup cooked vegetables, or 1 cup of salad vegetables. Include fresh, dried, frozen and tinned vegetables)



○ I don't eat vegetables
○ Less than 1 serve
○ 1 serve
○ 2 serves
○ 3 serves
○ 4 serves
○ 5 serves
○ 6 or more serves

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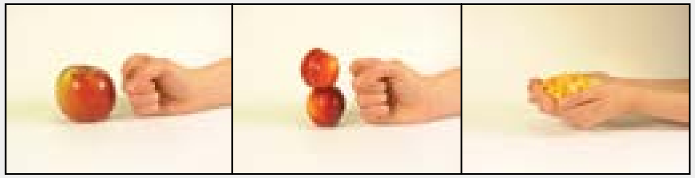
8. How many serves of fruit do you usually eat each day?
(The picture shows a serve of fruit. A serve is also = 1 cup of diced pieces. Include fresh, dried, frozen and tinned fruit)



○ I don't eat fruit
○ Less than 1 serve
○ 1 serve
○ 2 serves
○ 3 serves
○ 4 serves
○ 5 serves
○ 6 or more serves

9. Please indicate how often you usually eat the following foods.

FOODS	Never or Rarely	PER WEEK: 1 to 2 times a WEEK	PER WEEK: 3 to 4 times a WEEK	PER WEEK: 5 to 6 times a WEEK	PER DAY: Once a DAY	PER DAY: 2 or more times a DAY
Meat products such as sausages, frankfurters, devon, ham, hamburgers or chicken nuggets	○	○	○	○	○	○
Red meat, such as beef or lamb. Include all steaks, chops, roasts, mince, stir fries and casseroles. Do not include pork or chicken	○	○	○	○	○	○
Hot chips, French fries, wedges or fried potatoes	○	○	○	○	○	○
Potato crisps or other salty snacks (such as Twisties or corn chips)	○	○	○	○	○	○
Snack foods, such as sweet and savoury biscuits, cakes, donuts, or muesli bars	○	○	○	○	○	○
Confectionery, such as lollies and chocolate	○	○	○	○	○	○
Ice-cream or ice blocks	○	○	○	○	○	○

10. How often do you?

FOODS	Never or Rarely	PER WEEK: Less than once a WEEK	PER WEEK: About 1 to 2 times a WEEK	PER WEEK: About 3 to 4 times a WEEK	PER WEEK: About 5 to 6 times a WEEK	Every day
Usually have takeaway meals or snacks from places like McDonald's, Hungry Jack's, Pizza Hut, KFC, Red Rooster or local takeaway food places	○	○	○	○	○	○
Usually have something for breakfast	○	○	○	○	○	○
Usually eat dinner in front of the television	○	○	○	○	○	○

11. Please indicate how many cups of the following drinks you usually consume.
(These pictures will help you answer the drink questions)

DRINKS	Never or Rarely	CUPS PER WEEK: 1 cup or less a WEEK	CUPS PER WEEK: 2 to 4 cups a WEEK	CUPS PER WEEK: 5 to 6 cups a WEEK	CUPS PER DAY: 1 cup a DAY	CUPS PER DAY: 1½ cups a DAY	CUPS PER DAY: 2 or more cups a DAY
Fruit juice 1 cup = 250mls; 1 large popper	○	○	○	○	○	○	○
Plain water (tap or bottled) 1 cup = 250mls; 600ml bottle = 2½ cups	○	○	○	○	○	○	○
Flavoured water (eg Smart Water, Vitamin Water) 600ml bottle = 2½ cups	○	○	○	○	○	○	○
Milk (Include all types of milk, including flavoured milk and milk on cereal) 1 cup = 250mls	○	○	○	○	○	○	○
Soft drink or cordials 1 cup = 250ml; 375ml can of soft drink = 1½ cups; 600ml bottle = 2½ cups	○	○	○	○	○	○	○
'Diet' soft drink or diet cordial, such as Diet Coke or Sprite or Coke Zero 1 cup = 250ml; 375ml can of soft drink = 1½ cups; 600ml bottle = 2½ cups	○	○	○	○	○	○	○
Sports drinks (eg Gatorade, Powerade) 600ml bottle = 2½ cups	○	○	○	○	○	○	○

12. Please indicate how often you usually drink Energy drinks (eg Mother, V, Red Bull).

ENERGY DRINKS	Never or Rarely	PER WEEK: 1 or less times a WEEK	PER WEEK: 2 to 4 times a WEEK	PER WEEK: 5 to 6 times a WEEK	PER DAY: Once a DAY	PER DAY: 2 or more times a DAY
Small can/bottle (less than 500mls)	○	○	○	○	○	○
Big can/bottle (500mls or more)	○	○	○	○	○	○

13. What type of milk do you usually drink?
- ○ I don't drink milk
- ○ Whole
- ○ Low/reduced fat
- ○ Skim
- ○ Soy
- ○ Other type milk (such as rice, goat, evaporated or sweetened condensed)
- ○ Don't know

14. On school days, how often do you buy your lunch from the SCHOOL CANTEEN?
- ○ My school doesn't have a canteen
- ○ I don't buy lunch from the school canteen
- ○ 1 time per week
- ○ 2 times per week
- ○ 3 times per week
- ○ 4 times per week
- ○ 5 times per week

15. What kind of drink do you usually buy from the SCHOOL CANTEEN?
(If you buy more than one type of drink, choose the one you buy most often)
- ○ My school doesn't have a canteen
- ○ I don't buy drinks from the canteen
- ○ Fruit juices
- ○ Sport drinks
- ○ Plain water
- ○ Flavoured water
- ○ Regular soft drink
- ○ 'Diet' or 'low joule' soft drink
- ○ Milk (plain or flavoured)

16. What kind of drink do you usually buy from the SCHOOL VENDING MACHINE?
(If you buy more than one type of drink, choose the one you buy most often)
- ○ My school doesn't have a vending machine
- ○ I don't buy drinks from the vending machine
- ○ Fruit juices
- ○ Sport drinks
- ○ Plain water
- ○ Flavoured water
- ○ Regular soft drink
- ○ 'Diet' or 'low joule' soft drink
- ○ Milk (plain or flavoured)

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PHYSICAL ACTIVITY

Now, some questions about the physical activities you usually do in a normal week at school, before and after school and on weekends. DO NOT INCLUDE SCHOOL HOLIDAYS.

Summer school terms = Term 4 last year/Term 1 this year
Winter school terms = Term 3 last year

17. What ORGANISED SPORTS AND GAMES do you usually do during the SUMMER SCHOOL TERMS? Please think about a normal week and write in the table below.

SPORT OR GAME	Tick the term (s) you did it in	Number of times each week you usually do this sport or game, including training	The usual amount of time you spend doing this sport or game each time you do it (Hours / Minutes)
1 PSSA: Name of Sport	○ Term 1 (now) ○ Term 4 (last year)	Training: per week Competition: per week	
2 School Sport (NOT PSSA): Name of Sport	○ Term 1 (now) ○ Term 4 (last year)	Times per week	
3 FITNESS	○ Term 1 (now) ○ Term 4 (last year)	Times per week	
4 PE	○ Term 1 (now) ○ Term 4 (last year)	Times per week	
5	○ Term 1 (now) ○ Term 4 (last year)	Training: per week Competition: per week	
6	○ Term 1 (now) ○ Term 4 (last year)	Training: per week Competition: per week	
7	○ Term 1 (now) ○ Term 4 (last year)	Training: per week Competition: per week	

EXAMPLES OF SOME SPORTS AND GAMES YOU MAY DO

Aerobics	Dance (ballet)	Hockey	Rowing	Swimming
Athletics	Dance (ballroom)	Indoor soccer	Rugby League	T-ball
Australian Rules	Dance (jazz)	Inline hockey	Rugby Union	Tennis
Baseball	Dance (tap)	Lifesaving (competition)	Running	Touch football
Basketball	Dance (performance)	Martial arts	Soccer	Volleyball
Cricket	Golf	Netball	Softball	
Cycling (competitive)	Gymnastics	Oztag	Squash	

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18. What ORGANISED SPORTS AND GAMES do you usually do during the WINTER SCHOOL TERMS (Term 3 last year)? Please think about a normal week and write in the table below.

SPORT OR GAME	Number of times each week you usually do this sport or game, including training	The usual amount of time you spend doing this sport or game each time you do it (Hours / Minutes)
1 PSSA: Name of Sport	Training: per week Competition: per week	
2 School Sport (NOT PSSA): Name of Sport	Times per week	
3 FITNESS	Times per week	
4 PE	Times per week	
5	Training: per week Competition: per week	
6	Training: per week Competition: per week	
7	Training: per week Competition: per week	

EXAMPLES OF SOME SPORTS AND GAMES YOU MAY DO

Aerobics	Dance (ballet)	Hockey	Rowing	Swimming
Athletics	Dance (ballroom)	Indoor soccer	Rugby League	T-ball
Australian Rules	Dance (jazz)	Inline hockey	Rugby Union	Tennis
Baseball	Dance (tap)	Lifesaving (competition)	Running	Touch football
Basketball	Dance (performance)	Martial arts	Soccer	Volleyball
Cricket	Golf	Netball	Softball	
Cycling (competitive)	Gymnastics	Oztag	Squash	

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19. What NON-ORGANISED PHYSICAL ACTIVITIES do you usually do during the SUMMER SCHOOL TERMS (Term 4 last year and Term 1 this year)? Please think about a normal week and write in the table below.

NAME OF PHYSICAL ACTIVITY YOU USUALLY DO	Number of times each week you usually do this activity	The usual amount of time you spend doing this activity each time you do it
		Hours Minutes
1 Recess: Name of Activity	Times per week	
2 Lunch: Name of Activity	Times per week	
3	Times per week	
4	Times per week	
5	Times per week	
6	Times per week	
7	Times per week	

EXAMPLES OF SOME ACTIVITIES YOU MAY DO

Backyard cricket	Fishing	Surfing (body)
Ball games	Frisbee	Walking for pleasure
BMX	Kicking a ball around	Walking for transport
Bushwalking	Playing in pool	Walking the dog
Chores	Rollerblading	Tag (running games)
Cycling for fun	Skateboarding	Tennis
Cycling for transport	Soccer with friends	Touch football
Dance around	Surfing (board)	

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20. What NON-ORGANISED PHYSICAL ACTIVITIES do you usually do during the WINTER SCHOOL TERMS (Term 3 last year)? Please think about a normal week and write in the table below.

NAME OF PHYSICAL ACTIVITY YOU USUALLY DO	Number of times each week you usually do this activity	The usual amount of time you spend doing this activity each time you do it
		Hours Minutes
1 Recess: Name of Activity	Times per week	
2 Lunch: Name of Activity	Times per week	
3	Times per week	
4	Times per week	
5	Times per week	
6	Times per week	
7	Times per week	

EXAMPLES OF SOME ACTIVITIES YOU MAY DO

Backyard cricket	Fishing	Surfing (body)
Ball games	Frisbee	Walking for pleasure
BMX	Kicking a ball around	Walking for transport
Bushwalking	Playing in pool	Walking the dog
Chores	Rollerblading	Tag (running games)
Cycling for fun	Skateboarding	Tennis
Cycling for transport	Soccer with friends	Touch football
Dance around	Surfing (board)	

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SCHOOL TRAVEL

21. How do you travel TO school in a usual week? (Please indicate the number of days you use each type of transport and the time you spend on that type of transport).

TRANSPORT	On how many days a week do you use this type of transport to go to school? 1 Day	2 Days	3 Days	4 Days	5 Days	How long do you spend on this transport on the way to school? Hours	Minutes
Bus	○	○	○	○	○		
Car	○	○	○	○	○		
Cycle	○	○	○	○	○		
Ferry/boat	○	○	○	○	○		
Skateboard/scooter	○	○	○	○	○		
Train	○	○	○	○	○		
Walk	○	○	○	○	○		

22. How do you travel home FROM school in a usual week? (Please indicate the number of days you use each type of transport and the time you spend on that type of transport).

TRANSPORT	On how many days a week do you use this type of transport to go home from school? 1 Day	2 Days	3 Days	4 Days	5 Days	How long do you spend on this transport on the way home from school? Hours	Minutes
Bus	○	○	○	○	○		
Car	○	○	○	○	○		
Cycle	○	○	○	○	○		
Ferry/boat	○	○	○	○	○		
Skateboard/scooter	○	○	○	○	○		
Train	○	○	○	○	○		
Walk	○	○	○	○	○		

SEDENTARY ACTIVITIES

NOW, SOME QUESTIONS ABOUT ACTIVITIES YOU DO SITTING DOWN

Overall, you have about 8 hours of free time before and after school, some of which is spent sitting. You may do multiple activities at the same time (play with smart phone in front of the TV), so please estimate how much time was spent on *each* activity within the total time spent doing both.

23. Think about a normal *school week*, and write down how long you spend doing the following activities before and after school each day. Leave blank if you do not do that activity.

	Monday Hours	Monday Minutes	Tuesday Hours	Tuesday Minutes	Wednesday Hours	Wednesday Minutes	Thursday Hours	Thursday Minutes	Friday Hours	Friday Minutes
Watching TV										
Watching videos/DVDs										
Using the computer for fun										
Playing on smart phone or iPad										
Playing computer or video games (Nintendo, Xbox, PlayStation, Wii)										
Using the computer for doing homework										
Doing homework not on the computer										
Reading for fun										
Being tutored										
Travel (car/bus/train)										
Doing crafts or hobbies										
Sitting around (chatting with friends/on the phone/chilling)										
Playing/practising a musical instrument										

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Overall, you have about 16 hours of free time on a weekend day, some of which is spent sitting. You may do multiple activities at the same time (play with smart phone in front of the TV), so please estimate how much time was spent on _each_ activity within the total time spent doing both.

24. Now think about a normal *weekend*, and write down how long you spend doing the following activities each weekend day. Leave blank if you do not do that activity.

	Saturday		Sunday	
	Hours	Minutes	Hours	Minutes
Watching TV				
Watching videos/DVDs				
Using the computer for fun				
Playing on smart phone or iPad				
Playing computer or video games (Nintendo, Xbox, PlayStation, Wii)				
Using the computer for doing homework				
Doing homework not on the computer				
Reading for fun				
Being tutored				
Travel (car/bus/train)				
Doing crafts or hobbies				
Sitting around (chatting with friends/on the phone/chilling)				
Playing/practising a musical instrument				
Going to church or Saturday school				

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A BIT MORE ABOUT YOU AND YOUR FAMILY

25. Over the past 7 days, on how many days were you engaged in moderate to vigorous physical activity for at least 60 minutes (this can be accumulated over the entire day, for example in bouts of 10 minutes) each day?

Moderate to vigorous activity is any activity that increases the heart rate and gets you out of breath some of the time

○ No days ○ 1 day ○ 2 days ○ 3 days ○ 4 days ○ 5 days ○ 6 days ○ 7 days

26. How often does your family offer sweets (lollies, ice cream, cake, biscuits) to you as a reward for good behaviour?
○ Usually ○ Sometimes ○ Rarely/Never

27. At home, do you snack (chips, biscuits, muesli bars etc) and/or drink soft drinks whenever you like?
○ Yes ○ No, I have to ask my parents first

28. How often are soft drinks available in your home?
○ Usually ○ Sometimes ○ Rarely/Never

29. Do you have a television in your bedroom?
○ Yes ○ No

30. How often do your parents set limits/rules on your screen time eg TV, DVDs, electronic games, tablets (iPad, mobile, smart phone etc)?
○ Usually ○ Sometimes ○ Rarely/Never

31. Do you use electronic media (eg mobile or smart phone, iPad, computer) during sleep time?
○ Usually ○ Sometimes ○ Rarely/Never

YOUR TEETH

32. During the past 12 months, how often have you had toothache?
○ Very often ○ Often ○ Sometimes ○ Hardly ever ○ Rarely/Never

33. How often have you had to avoid eating some foods because of problems with your teeth or mouth during the past 12 months?
○ Very often ○ Often ○ Sometimes ○ Hardly ever ○ Rarely/Never

34. In the past week, how many times did you brush your teeth?
○ Less than once a day ○ Once a day ○ Twice a day or more than twice a day

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YOUR SLEEP TIME

35. What time do you usually go to bed on a school night?
    [ ][ ] : [ ][ ] PM

36. What time do you usually get up on a school day?
    [ ][ ] : [ ][ ] AM

37. What time do you usually go to bed on a non-school night?
    [ ][ ] : [ ][ ] PM

38. What time do you usually get up on a non-school day?
    [ ][ ] : [ ][ ] AM

DO YOU KNOW

39. How many minutes of physical activity is it recommended that school aged children do each day?
    [ ][ ] minutes **OR** ○ Don't know

40. Up to how many hours of television, video, DVD or computer games is it recommended that school aged children watch each day?
    [ ][ ] hours **OR** ○ Don't know

YOU HAVE NOW FINISHED THE QUESTIONNAIRE
Please put up your hand and we will collect the questionnaire

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FUNDAMENTAL MOVEMENT SKILLS ASSESSMENT SHEET

PLEASE DO NOT WRITE ANYTHING ON THE NEXT TWO PAGES

CATCH: 'Catch the bean bag with two hands'

○ Not attempted
1. ○ Eyes focused on the object throughout the catch
2. ○ Feet move to place the body in line with the object
3. ○ Hands move to meet the object
4. ○ Hands and fingers relaxed and slightly cupped to catch the object
5. ○ Catch and control object with hands only (well-timed closure)
6. ○ Elbows bend to absorb the force of the object

KICK (stationary ball): 'Run up to the ball and kick it as hard as you can'

○ Not attempted
1. ○ Eyes focused on the ball throughout the kick
2. ○ Forward and sideward swing of arm opposite kicking
3. ○ Non-kicking foot placed beside the ball
4. ○ Bend knee of kicking leg at least 90 degrees during the back swing
5. ○ Contact ball with top of the foot (a "shoelace" kick) or instep
6. ○ Kicking leg follows through high towards the target area

OVERARM THROW: 'Throw the object as far as you can' Student may take 2-3 steps

○ Not attempted
1. ○ Eyes focused on target throughout the throw
2. ○ Stands side-on to target area
3. ○ Throwing arm moves in a downward and backward arc
4. ○ Step towards target area with foot opposite throwing arm
5. ○ Hips then shoulders rotate forward
6. ○ Throwing arm follows through down and across the body

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SPRINT RUN:	'Run as fast as you can from one end to another'
	○ Not attempted
1.	○ Lands on ball of the foot
2.	○ Non-support knee bent at least 90 degrees during the recovery phase
3.	○ High knee lift, thigh almost parallel to the ground
4.	○ Head and trunk stable, eyes focused forward
5.	○ Elbows bent at 90 degrees
6.	○ Arms drive forward and back in opposition to legs

VERTICAL JUMP:	'Jump as high as you can'
	○ Not attempted
1.	○ Eyes focused forward or upward throughout the jump
2.	○ Crouch with knees bent and arms behind the body
3.	○ Forceful forward and upward swing of the arms
4.	○ Legs straighten in the air
5.	○ Lands on balls of the feet and bends knees to absorb landing
6.	○ Controlled landing with no more than one step in any direction

SIDE GALLOP:	'Side gallop from one end to the other and return'
	○ Not attempted
1.	○ Smooth rhythmical movement
2.	○ Brief period where both feet are off the ground
3.	○ Weight on the balls of the feet
4.	○ Hips and shoulders point to the front
5.	○ Head stable, eyes focused forward or in the direction of travel

LEAP:	'Run up to the marker and leap as far as you can'
	○ Not attempted
1.	○ Eyes focused forward throughout the leap
2.	○ Knee of take-off leg bends
3.	○ Legs straighten during flight
4.	○ Arms held in opposition to the legs
5.	○ Trunk leans slightly forward
6.	○ Lands on ball of the foot and bends knee to absorb landing

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APPENDIX - YEAR 8 AND 10 QUESTIONNAIRE

20801

THE UNIVERSITY OF SYDNEY

NSW GOVERNMENT | Health

SCHOOLS PHYSICAL ACTIVITY AND NUTRITION SURVEY 2015

YEAR 8 AND 10 QUESTIONNAIRE

INTRODUCTION

Thank you for helping us today.

Many students throughout NSW are helping us by completing this questionnaire which will help us understand more about the health of young people.

The answers are confidential and will be looked at by the survey team and no-one else. No-one at your school will see your answers.

This questionnaire is voluntary and you can withdraw at any time.

COMPLETION GUIDELINES

Please answer each question the best you can. Please use a **BLACK** or **DARK BLUE** pen.

Please shade the circles completely (do not tick or cross)	Write clearly within the boxes	Write clearly within each space
●	A B C 1 2 3	PLEASE WRITE IN CAPITAL LETTERS

If you make a mistake, or want to change any of your shaded responses, please place a cross through the incorrect response and then shade the correct response ●

For written responses, please cross out your incorrect response and write your new response just above or below the one you have crossed out.

~~INCORRECT~~

CORRECT

BIOGRAPHICAL DETAILS

First name:

Surname:

Year: Class Name:

School:

School ID: Office Use Only

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DEMOGRAPHICS

FIRST, A FEW QUESTIONS ABOUT YOU

1. What is your date of birth?

Day / Month / Year

2. Are you a boy or a girl?

○ Boy ○ Girl

3. What language do you speak most at home?

○ English ○ Another language (please write it below)

4. Are you of Aboriginal and/or Torres Strait Islander origin?

○ Yes ○ No ○ Don't know

5. What suburb do you usually live in?

6. What is the postcode where you usually live?

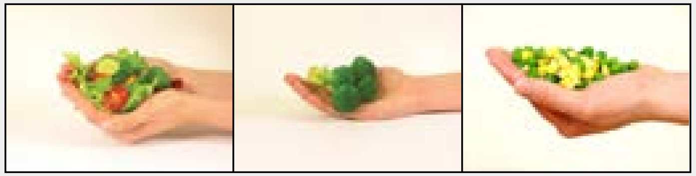
PLEASE DO NOT WRITE IN THIS BOX

Height (cm)	Weight (kg)	Waist (cm)	MFT	SBJ
.	.	.		.

THE FOODS YOU EAT

PLEASE SHADE ONLY ONE CIRCLE FOR EACH QUESTION

7. How many serves of vegetables do you usually eat each day?
(The picture shows a serve of vegetables. A serve is also = ½ cup cooked vegetables, or 1 cup of salad vegetables. Include fresh, dried, frozen and tinned vegetables)



○ I don't eat vegetables
○ Less than 1 serve
○ 1 serve
○ 2 serves
○ 3 serves
○ 4 serves
○ 5 serves
○ 6 or more serves

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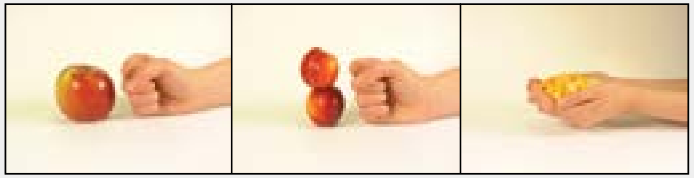
8. How many serves of fruit do you usually eat each day?
(The picture shows a serve of fruit. A serve is also = 1 cup of diced pieces. Include fresh, dried, frozen and tinned fruit)



○ I don't eat fruit
○ Less than 1 serve
○ 1 serve
○ 2 serves
○ 3 serves
○ 4 serves
○ 5 serves
○ 6 or more serves

9. Please indicate how often you usually eat the following foods.

FOODS	Never or Rarely	PER WEEK: 1 to 2 times a WEEK	PER WEEK: 3 to 4 times a WEEK	PER WEEK: 5 to 6 times a WEEK	PER DAY: Once a DAY	PER DAY: 2 or more times a DAY
Meat products such as sausages, frankfurters, devon, ham, hamburgers or chicken nuggets	○	○	○	○	○	○
Red meat, such as beef or lamb. Include all steaks, chops, roasts, mince, stir fries and casseroles. Do not include pork or chicken	○	○	○	○	○	○
Hot chips, French fries, wedges or fried potatoes	○	○	○	○	○	○
Potato crisps or other salty snacks (such as Twisties or corn chips)	○	○	○	○	○	○
Snack foods, such as sweet and savoury biscuits, cakes, donuts, or muesli bars	○	○	○	○	○	○
Confectionery, such as lollies and chocolate	○	○	○	○	○	○
Ice-cream or ice blocks	○	○	○	○	○	○

10. How often do you?

FOODS	Never or Rarely	PER WEEK: Less than once a WEEK	PER WEEK: About 1 to 2 times a WEEK	PER WEEK: About 3 to 4 times a WEEK	PER WEEK: About 5 to 6 times a WEEK	Every day
Usually have takeaway meals or snacks from places like McDonald's, Hungry Jack's, Pizza Hut, KFC, Red Rooster or local takeaway food places	○	○	○	○	○	○
Usually have something for breakfast	○	○	○	○	○	○
Usually eat dinner in front of the television	○	○	○	○	○	○

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11. **Please indicate how many cups of the following drinks you usually consume.**
(These pictures will help you answer the drink questions)

DRINKS	Never or Rarely	CUPS PER WEEK: 1 cup or less a WEEK	CUPS PER WEEK: 2 to 4 cups a WEEK	CUPS PER WEEK: 5 to 6 cups a WEEK	CUPS PER DAY: 1 cup a DAY	CUPS PER DAY: 1½ cups a DAY	CUPS PER DAY: 2 or more cups a DAY
Fruit juice 1 cup = 250mls; 1 large popper	○	○	○	○	○	○	○
Plain water (tap or bottled) 1 cup = 250mls; 600ml bottle = 2½ cups	○	○	○	○	○	○	○
Flavoured water (eg Smart Water, Vitamin Water) 600ml bottle = 2½ cups	○	○	○	○	○	○	○
Milk (Include all types of milk, including flavoured milk and milk on cereal) 1 cup = 250mls	○	○	○	○	○	○	○
Soft drink or cordials 1 cup = 250ml; 375ml can of soft drink = 1½ cups; 600ml bottle = 2½ cups	○	○	○	○	○	○	○
'Diet' soft drink or diet cordial, such as Diet Coke or Sprite or Coke Zero 1 cup = 250ml; 375ml can of soft drink = 1½ cups; 600ml bottle = 2½ cups	○	○	○	○	○	○	○
Sports drinks (eg Gatorade, Powerade) 600ml bottle = 2½ cups	○	○	○	○	○	○	○

12. **Please indicate how often you usually drink Energy drinks (eg Mother, V, Red Bull).**

ENERGY DRINKS	Never or Rarely	PER WEEK: 1 or less times a WEEK	PER WEEK: 2 to 4 times a WEEK	PER WEEK: 5 to 6 times a WEEK	PER DAY: Once a DAY	PER DAY: 2 or more times a DAY
Small can/bottle (less than 500mls)	○	○	○	○	○	○
Big can/bottle (500mls or more)	○	○	○	○	○	○

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13. **What type of milk do you usually drink?**
- ○ I don't drink milk
- ○ Whole
- ○ Low/reduced fat
- ○ Skim
- ○ Soy
- ○ Other type milk (such as rice, goat, evaporated or sweetened condensed)
- ○ Don't know

14. **On school days, how often do you buy your lunch from the SCHOOL CANTEEN?**
- ○ My school doesn't have a canteen
- ○ I don't buy lunch from the school canteen
- ○ 1 time per week
- ○ 2 times per week
- ○ 3 times per week
- ○ 4 times per week
- ○ 5 times per week

15. **What kind of drink do you usually buy from the SCHOOL CANTEEN?**
(If you buy more than one type of drink, choose the one you buy most often)
- ○ My school doesn't have a canteen
- ○ I don't buy drinks from the canteen
- ○ Fruit juices
- ○ Sport drinks
- ○ Plain water
- ○ Flavoured water
- ○ Regular soft drink
- ○ 'Diet' or 'low joule' soft drink
- ○ Milk (plain or flavoured)

16. **What kind of drink do you usually buy from the SCHOOL VENDING MACHINE?**
(If you buy more than one type of drink, choose the one you buy most often)
- ○ My school doesn't have a vending machine
- ○ I don't buy drinks from the vending machine
- ○ Fruit juices
- ○ Sport drinks
- ○ Plain water
- ○ Flavoured water
- ○ Regular soft drink
- ○ 'Diet' or 'low joule' soft drink
- ○ Milk (plain or flavoured)

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PHYSICAL ACTIVITY

Now, some questions about the physical activities you usually do in a normal week at school, before and after school and on weekends. DO NOT INCLUDE SCHOOL HOLIDAYS.

Summer school terms = Term 4 last year/Term 1 this year
Winter school terms = Term 3 last year

17. What ORGANISED SPORTS AND GAMES do you usually do during the SUMMER SCHOOL TERMS? Please think about a normal week and write in the table below.

SPORT OR GAME	Tick the term (s) you did it in	Number of times each week you usually do this sport or game, including training	The usual amount of time you spend doing this sport or game each time you do it (Hours / Minutes)
1 SCHOOL SPORT	○ Term 1 (now) ○ Term 4 (last year)	☐ Times per week	Hours ☐ Minutes ☐☐
2 PE	○ Term 1 (now) ○ Term 4 (last year)	☐ Times per week	☐ ☐☐
3	○ Term 1 (now) ○ Term 4 (last year)	☐ Times per week	☐ ☐☐
4	○ Term 1 (now) ○ Term 4 (last year)	☐ Times per week	☐ ☐☐
5	○ Term 1 (now) ○ Term 4 (last year)	☐ Times per week	☐ ☐☐
6	○ Term 1 (now) ○ Term 4 (last year)	☐ Times per week	☐ ☐☐
7	○ Term 1 (now) ○ Term 4 (last year)	☐ Times per week	☐ ☐☐

EXAMPLES OF SOME SPORTS AND GAMES YOU MAY DO

Aerobics, Athletics, Australian Rules, Baseball, Basketball, Cricket, Cycling (competitive), Dance (ballet), Dance (ballroom), Dance (jazz), Dance (tap), Dance (performance), Golf, Gymnastics, Hockey, Indoor soccer, Inline hockey, Lifesaving (competition), Martial arts, Netball, Oztag, Rowing, Rugby League, Rugby Union, Running, Soccer, Softball, Squash, Swimming, T-ball, Tennis, Touch football, Volleyball

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18. What ORGANISED SPORTS AND GAMES do you usually do during the WINTER SCHOOL TERMS (Term 3 last year)? Please think about a normal week and write in the table below.

SPORT OR GAME	Number of times each week you usually do this sport or game, including training	The usual amount of time you spend doing this sport or game each time you do it (Hours / Minutes)
1 SCHOOL SPORT	☐ Times per week	Hours ☐ Minutes ☐☐
2 PE	☐ Times per week	☐ ☐☐
3	☐ Times per week	☐ ☐☐
4	☐ Times per week	☐ ☐☐
5	☐ Times per week	☐ ☐☐
6	☐ Times per week	☐ ☐☐
7	☐ Times per week	☐ ☐☐

EXAMPLES OF SOME SPORTS AND GAMES YOU MAY DO

Aerobics, Athletics, Australian Rules, Baseball, Basketball, Cricket, Cycling (competitive), Dance (ballet), Dance (ballroom), Dance (jazz), Dance (tap), Dance (performance), Golf, Gymnastics, Hockey, Indoor soccer, Lifesaving (competition), Martial arts, Netball, Oztag, Rowing, Rugby League, Rugby Union, Running, Soccer, Softball, Squash, Swimming, T-ball, Tennis, Touch football, Volleyball

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19. **What NON-ORGANISED PHYSICAL ACTIVITIES do you usually do during the SUMMER SCHOOL TERMS (Term 4 last year and Term 1 this year)? Please think about a normal week and write in the table below.**

NAME OF PHYSICAL ACTIVITY YOU USUALLY DO	Number of times each week you usually do this activity	The usual amount of time you spend doing this activity each time you do it
1 Name of Activity	Times per week	Hours Minutes
2 Name of Activity	Times per week	
3	Times per week	
4	Times per week	
5	Times per week	
6	Times per week	
7	Times per week	

EXAMPLES OF SOME ACTIVITIES YOU MAY DO

Backyard cricket	Fishing	Surfing (body)
Ball games	Frisbee	Walking for pleasure
BMX	Kicking a ball around	Walking for transport
Bushwalking	Playing in pool	Walking the dog
Chores	Rollerblading	Tennis
Cycling for fun	Skateboarding	Touch football
Cycling for transport	Soccer with friends	
Dance around	Surfing (board)	

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20. **What NON-ORGANISED PHYSICAL ACTIVITIES do you usually do during the WINTER SCHOOL TERMS (Term 3 last year)? Please think about a normal week and write in the table below.**

NAME OF PHYSICAL ACTIVITY YOU USUALLY DO	Number of times each week you usually do this activity	The usual amount of time you spend doing this activity each time you do it
1 Name of Activity	Times per week	Hours Minutes
2 Name of Activity	Times per week	
3	Times per week	
4	Times per week	
5	Times per week	
6	Times per week	
7	Times per week	

EXAMPLES OF SOME ACTIVITIES YOU MAY DO

Backyard cricket	Fishing	Surfing (body)
Ball games	Frisbee	Walking for pleasure
BMX	Kicking a ball around	Walking for transport
Bushwalking	Playing in pool	Walking the dog
Chores	Rollerblading	Tennis
Cycling for fun	Skateboarding	Touch football
Cycling for transport	Soccer with friends	
Dance around	Surfing (board)	

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SCHOOL TRAVEL

21. **How do you travel TO school in a usual week?** (Please indicate the number of days you use each type of transport and the time you spend on that type of transport).

TRANSPORT	On how many days a week do you use this type of transport to go to school? 1 Day	2 Days	3 Days	4 Days	5 Days	How long do you spend on this transport on the way to school? Hours	Minutes
Bus	○	○	○	○	○		
Car	○	○	○	○	○		
Cycle	○	○	○	○	○		
Ferry/boat	○	○	○	○	○		
Skateboard/scooter	○	○	○	○	○		
Train	○	○	○	○	○		
Walk	○	○	○	○	○		

22. **How do you travel home FROM school in a usual week?** (Please indicate the number of days you use each type of transport and the time you spend on that type of transport).

TRANSPORT	On how many days a week do you use this type of transport to go home from school? 1 Day	2 Days	3 Days	4 Days	5 Days	How long do you spend on this transport on the way home from school? Hours	Minutes
Bus	○	○	○	○	○		
Car	○	○	○	○	○		
Cycle	○	○	○	○	○		
Ferry/boat	○	○	○	○	○		
Skateboard/scooter	○	○	○	○	○		
Train	○	○	○	○	○		
Walk	○	○	○	○	○		

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SEDENTARY ACTIVITIES

NOW, SOME QUESTIONS ABOUT ACTIVITIES YOU DO SITTING DOWN

Overall, you have about 8 hours of free time before and after school, some of which is spent sitting. You may do multiple activities at the same time (play with smart phone in front of the TV), so please estimate how much time was spent on *each* activity within the total time spent doing both.

23. **Think about a normal *school week*, and write down how long you spend doing the following activities before and after school each day. Leave blank if you do not do that activity.**

	Monday Hours	Monday Minutes	Tuesday Hours	Tuesday Minutes	Wednesday Hours	Wednesday Minutes	Thursday Hours	Thursday Minutes	Friday Hours	Friday Minutes
Watching TV										
Watching videos/DVDs										
Using the computer for fun										
Playing on smart phone or iPad										
Playing computer or video games (Nintendo, Xbox, PlayStation, Wii)										
Using the computer for doing homework										
Doing homework not on the computer										
Reading for fun										
Being tutored										
Travel (car/bus/train)										
Doing crafts or hobbies										
Sitting around (chatting with friends/on the phone/chilling)										
Playing/practising a musical instrument										

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Overall, you have about 16 hours of free time on a weekend day, some of which is spent sitting. You may do multiple activities at the same time (play with smart phone in front of the TV), so please estimate how much time was spent on *each* activity within the total time spent doing both.

24. Now think about a normal *weekend*, and write down how long you spend doing the following activities each weekend day. Leave blank if you do not do that activity.

	Saturday Hours	Saturday Minutes	Sunday Hours	Sunday Minutes
Watching TV				
Watching videos/DVDs				
Using the computer for fun				
Playing on smart phone or iPad				
Playing computer or video games (Nintendo, Xbox, PlayStation, Wii)				
Using the computer for doing homework				
Doing homework not on the computer				
Reading for fun				
Being tutored				
Travel (car/bus/train)				
Doing crafts or hobbies				
Sitting around (chatting with friends/on the phone/chilling)				
Playing/practising a musical instrument				
Going to church or Saturday school				

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A BIT MORE ABOUT YOU AND YOUR FAMILY

25. Over the past 7 days, on how many days were you engaged in moderate to vigorous physical activity for at least 60 minutes (this can be accumulated over the entire day, for example in bouts of 10 minutes) each day?

Moderate to vigorous activity is any activity that increases the heart rate and gets you out of breath some of the time

○ No days ○ 1 day ○ 2 days ○ 3 days ○ 4 days ○ 5 days ○ 6 days ○ 7 days

26. How often does your family offer sweets (lollies, ice cream, cake, biscuits) to you as a reward for good behaviour?

○ Usually ○ Sometimes ○ Rarely/Never

27. At home, do you snack (chips, biscuits, muesli bars etc) and/or drink soft drinks whenever you like?

○ Yes ○ No, I have to ask my parents first

28. How often are soft drinks available in your home?

○ Usually ○ Sometimes ○ Rarely/Never

29. Do you have a television in your bedroom?

○ Yes ○ No

30. How often do your parents set limits/rules on your screen time eg TV, DVDs, electronic games, tablets (iPad, mobile, smart phone etc)?

○ Usually ○ Sometimes ○ Rarely/Never

31. Do you use electronic media (eg mobile or smart phone, iPad, computer) during sleep time?

○ Usually ○ Sometimes ○ Rarely/Never

YOUR TEETH

32. During the past 12 months, how often have you had toothache?

○ Very often ○ Often ○ Sometimes ○ Hardly ever ○ Rarely/Never

33. How often have you had to avoid eating some foods because of problems with your teeth or mouth during the past 12 months?

○ Very often ○ Often ○ Sometimes ○ Hardly ever ○ Rarely/Never

34. In the past week, how many times did you brush your teeth?

○ Less than once a day ○ Once a day ○ Twice a day or more than twice a day

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YOUR SLEEP TIME

35. What time do you usually go to bed on a school night?

__ __ : __ __ PM

36. What time do you usually get up on a school day?

__ __ : __ __ AM

37. What time do you usually go to bed on a non-school night?

__ __ : __ __ PM

38. What time do you usually get up on a non-school day?

__ __ : __ __ AM

DO YOU KNOW

39. How many minutes of physical activity is it recommended that school aged children do each day?

__ __ minutes **OR** ○ Don't know

40. Up to how many hours of television, video, DVD or computer games is it recommended that school aged children watch each day?

__ __ hours **OR** ○ Don't know

YOU HAVE NOW FINISHED THE QUESTIONNAIRE
Please put up your hand and we will collect the questionnaire

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FUNDAMENTAL MOVEMENT SKILLS ASSESSMENT SHEET

PLEASE DO NOT WRITE ANYTHING ON THE NEXT TWO PAGES

CATCH: 'Catch the bean bag with two hands'

○ Not attempted
1. ○ Eyes focused on the object throughout the catch
2. ○ Feet move to place the body in line with the object
3. ○ Hands move to meet the object
4. ○ Hands and fingers relaxed and slightly cupped to catch the object
5. ○ Catch and control object with hands only (well-timed closure)
6. ○ Elbows bend to absorb the force of the object

KICK (stationary ball): 'Run up to the ball and kick it as hard as you can'

○ Not attempted
1. ○ Eyes focused on the ball throughout the kick
2. ○ Forward and sideward swing of arm opposite kicking
3. ○ Non-kicking foot placed beside the ball
4. ○ Bend knee of kicking leg at least 90 degrees during the back swing
5. ○ Contact ball with top of the foot (a "shoelace" kick) or instep
6. ○ Kicking leg follows through high towards the target area

OVERARM THROW: 'Throw the object as far as you can' Student may take 2-3 steps

○ Not attempted
1. ○ Eyes focused on target throughout the throw
2. ○ Stands side-on to target area
3. ○ Throwing arm moves in a downward and backward arc
4. ○ Step towards target area with foot opposite throwing arm
5. ○ Hips then shoulders rotate forward
6. ○ Throwing arm follows through down and across the body

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SPRINT RUN: **'Run as fast as you can from one end to another'**

○ Not attempted
1. ○ Lands on ball of the foot
2. ○ Non-support knee bent at least 90 degrees during the recovery phase
3. ○ High knee lift, thigh almost parallel to the ground
4. ○ Head and trunk stable, eyes focused forward
5. ○ Elbows bent at 90 degrees
6. ○ Arms drive forward and back in opposition to legs

VERTICAL JUMP: **'Jump as high as you can'**

○ Not attempted
1. ○ Eyes focused forward or upward throughout the jump
2. ○ Crouch with knees bent and arms behind the body
3. ○ Forceful forward and upward swing of the arms
4. ○ Legs straighten in the air
5. ○ Lands on balls of the feet and bends knees to absorb landing
6. ○ Controlled landing with no more than one step in any direction

SIDE GALLOP: **'Side gallop from one end to the other and return'**

○ Not attempted
1. ○ Smooth rhythmical movement
2. ○ Brief period where both feet are off the ground
3. ○ Weight on the balls of the feet
4. ○ Hips and shoulders point to the front
5. ○ Head stable, eyes focused forward or in the direction of travel

LEAP: **'Run up to the marker and leap as far as you can'**

○ Not attempted
1. ○ Eyes focused forward throughout the leap
2. ○ Knee of take-off leg bends
3. ○ Legs straighten during flight
4. ○ Arms held in opposition to the legs
5. ○ Trunk leans slightly forward
6. ○ Lands on ball of the foot and bends knee to absorb landing

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APPENDIX - PRIMARY SCHOOL ENVIRONMENT QUESTIONNAIRE

NSW Schools Physical Activity and Nutrition Survey 2015

Primary School Environment Questionnaire

This questionnaire forms part of the NSW Schools Physical Activity and Nutrition Survey (SPANS), 2015. We will use the information in conjunction with the results of the student questionnaire and fitness assessments to attempt to identify the factors associated with student fitness and physical activity levels. The results will inform efforts to improve student fitness and activity habits.

Please complete the questionnaire prior to the research team's visit to your school. It should take about 10 minutes of your time. Please feel free to discuss the questionnaire with any of your fellow teachers.

Your responses will be kept strictly confidential and the results will be published only in aggregate form. Thank you for your assistance.

Name of your school:____

How many teachers are employed at your school?___________________________
(include full-time, part-time, and casual)

How many specialist physical education teachers are employed at your school?_____

Is your school currently upgrading facilities in relation to providing physical activity opportunities for students? Yes [ ] No [ ]

1. Does your school have:

	Yes	No
Playground/quadrangle	[ ]	[ ]
Playground markings that encourage activity	[ ]	[ ]
Useable outdoor basketball/netball courts	[ ]	[ ]
Playing fields as part of the school grounds	[ ]	[ ]
Playing fields within reasonable walking distance	[ ]	[ ]
An indoor playing space (e.g., school hall) during wet/hot weather	[ ]	[ ]
A bike path near or around the school	[ ]	[ ]
Adequate sporting equipment, such as balls and bats	[ ]	[ ]
Fixed play equipment	[ ]	[ ]
Loose play equipment (e.g., playpods)	[ ]	[ ]

2. Are these facilities mostly available to students for physical activity during recess and lunchtimes?

	N/A	Yes	No
Playground/quadrangle	[ ]	[ ]	[ ]
Playground markings that encourage activity	[ ]	[ ]	[ ]
Useable outdoor basketball/netball courts	[ ]	[ ]	[ ]
Playing fields as part of the school grounds	[ ]	[ ]	[ ]
Playing fields within reasonable walking distance	[ ]	[ ]	[ ]
An indoor playing space (e.g., school hall) during wet/hot weather	[ ]	[ ]	[ ]
Sporting equipment, such as balls and bats	[ ]	[ ]	[ ]
Fixed play equipment	[ ]	[ ]	[ ]
Loose play equipment (e.g., playpods)	[ ]	[ ]	[ ]

3. How often are these facilities used by students for physical activity during recess and lunchtimes?

	N/A/ rarely	1-3 days/week	4-5 days week
Playground/quadrangle	[ ]	[ ]	[ ]
Playground markings that encourage activity	[ ]	[ ]	[ ]
Useable outdoor basketball/netball courts	[ ]	[ ]	[ ]
Playing fields as part of the school grounds	[ ]	[ ]	[ ]
Playing fields within reasonable walking distance	[ ]	[ ]	[ ]
An indoor playing space (e.g., school hall) during wet/hot weather	[ ]	[ ]	[ ]
Sporting equipment, such as balls and bats	[ ]	[ ]	[ ]
Fixed play equipment	[ ]	[ ]	[ ]
Loose play equipment (e.g., playpods)	[ ]	[ ]	[ ]

4. In your view does your school have adequate green space for students to actively play?

[ ] Yes, the green space is adequate [...] No, the green space is not adequate

5. In your view, how adequate are the sports/PE <u>facilities</u> and <u>equipment</u> in your school?

	Facilities	Equipment
Poor, in need of much improvement	[ ]	[ ]
Fair, in need of some improvement	[ ]	[ ]
Good, in need of little improvement	[ ]	[ ]
Excellent	[ ]	[ ]

6. If sports/PE <u>facilities</u> and <u>equipment</u> in your school are poor or fair, would the principal consider funding for improvements?

Yes	No, there are other priorities	N/A (facilities and equipment are good or excellent)
[ ]	[ ]	[ ]

7. How many lessons and how much time is allocated for PE and sport each week?

	PE lessons			Sport lessons		
School year	N/A	Lessons per week	Minutes per lesson	N/A	Lessons per week	Minutes per lesson
Kindergarten	[ ]			[ ]		
Year 1	[ ]			[ ]		
Year 2	[ ]			[ ]		
Year 3	[ ]			[ ]		
Year 4	[ ]			[ ]		
Year 5	[ ]			[ ]		
Year 6	[ ]			[ ]		

8. Who generally teaches PE and sport in your school?

	PE	Sport
Classroom teachers	[ ]	[ ]
Specialist PDHPE teachers	[ ]	[ ]
Parents	[ ]	[ ]
Outside sporting groups or external contractors	[ ]	[ ]
RFF teachers	[ ]	[ ]

9. In your school generally, how strong is support for

	Poor	Fair	Good
Sport?	[ ]	[ ]	[ ]
PE?	[ ]	[ ]	[ ]
PE and sport by PARENTS?	[ ]	[ ]	[ ]
Teaching fundamental movement skills?	[ ]	[ ]	[ ]

10. Below are some barriers to enhancing skill development, fitness, and physical activity in children and adolescents. Please show how strongly you think each one applies to your school.

Barrier	Does not apply	Sometimes applies	Strongly applies
Competing demands on curriculum time	[ ]	[ ]	[ ]
Amount of equipment available	[ ]	[ ]	[ ]
Expertise of teachers	[ ]	[ ]	[ ]
Amount and standard of facilities	[ ]	[ ]	[ ]
Lack of wet/hot weather facilities	[ ]	[ ]	[ ]
Level of school/home/community interaction	[ ]	[ ]	[ ]
Motivation/attitude of members of staff to teach FMS or promote physical activity	[ ]	[ ]	[ ]
Absence of a quality PE or sport program	[ ]	[ ]	[ ]
Lack of interest from students	[ ]	[ ]	[ ]
The gender of students	[ ]	[ ]	[ ]
Cultural background of students	[ ]	[ ]	[ ]
Design of the girls' sports uniform	[ ]	[ ]	[ ]

11. Below is a list of approaches that schools can use to promote physical activity amongst their students. Please indicate what level these approaches exist at your school.

Approaches	Never /rarely	Sometimes	Usually
Encouraging walking or bicycling to school	[ ]	[ ]	[ ]
Encouraging students to be more active outside school	[ ]	[ ]	[ ]
Encouraging the use of equipment and facilities *during* school hours	[ ]	[ ]	[ ]
Encouraging the use of equipment and facilities *before* school	[ ]	[ ]	[ ]
Encouraging the use of equipment and facilities *after* school	[ ]	[ ]	[ ]
Encouraging staff members to be involved in lunchtime physical activity programs	[ ]	[ ]	[ ]
Remedial motor skills programs for students	[ ]	[ ]	[ ]
Permitting community organisations to use facilities for physical activity outside school hours	[ ]	[ ]	[ ]
Involving students in decision-making regarding the sports and physical activities they participate in and the use and maintenance of facilities and equipment	[ ]	[ ]	[ ]
Encouragement/merit award	[ ]	[ ]	[ ]
Communication to parents regarding the importance of physical activity in children	[ ]	[ ]	[ ]
Physical activity included in PDHPE scope and sequence	[ ]	[ ]	[ ]
School Plan includes promoting physical activity to students	[ ]	[ ]	[ ]
Leadership programs for older students to encourage physical activity with younger students	[ ]	[ ]	[ ]

12. Does your school:

	Yes	No	No, but would like to
Include healthy eating in PDHPE scope and sequence?	[ ]	[ ]	[ ]
Address healthy eating in the School Plan?	[ ]	[ ]	[ ]
Have healthy fundraising options?	[ ]	[ ]	[ ]
Encourage the provision of healthy food and drinks to students for activities including excursions, camps, sport carnivals and other school functions?	[ ]	[ ]	[ ]
Promote and model healthy eating during school activities involving the wider community, including school fetes and school functions?	[ ]	[ ]	[ ]
Communicate to parents the importance of healthy eating?	[ ]	[ ]	[ ]

13. Does your school:

	Yes	No	No, but would like to
Have a canteen?	[ ]	[ ]	[ ]
Have a canteen manager?	[ ]	[ ]	[ ]
Address healthy canteens in the School Plan?	[ ]	[ ]	[ ]
Have "FreshTastes@School" NSW Healthy School Canteen Strategy?	[ ]	[ ]	[ ]

Over the past few years a number of government school-based initiatives have been developed to support schools in delivering healthy eating and physical activity programs.

14. Thinking of last year and this year, did/does your school offer any of the following programs to students?

	Yes	**No**	**No but would like to offer to my students**
Fruit, vegetable or water breaks	[ ]	[ ]	[ ]
Are you a registered Crunch and Sip school?	[ ]	[ ]	[ ]
School kitchen garden	[ ]	[ ]	[ ]
Q4:H2O (a student activity to promote healthy drinks)	[ ]	[ ]	[ ]
Heart Foundation's *Jump Rope for Heart*	[ ]	[ ]	[ ]
NSW Premier's Sporting Challenge	[ ]	[ ]	[ ]
Live Outside the Box (A student activity to raise awareness about healthy eating, physical activity and limiting recreational screen time)	[ ]	[ ]	[ ]
Live Life Well @ School initiatives (child obesity prevention program)	[ ]	[ ]	[ ]
Active After Schools Community	[ ]	[ ]	[ ]
Outside of School Hours (OOSH) programs	[ ]	[ ]	[ ]

15. P&C and fundraising

	Yes	**No**
Does your school have an active P&C?	[ ]	[ ]
Is the school dependent on fundraising (or external funds) to pay for upgrades to outdoor (play) spaces, such as gardens, play equipment, shade cloths, etc.?	[ ]	[ ]
Is the school dependent on fundraising to pay for specialist sport programs or dedicated PE teachers?	[ ]	[ ]
Is the P&C actively involved in fundraising for play spaces / sport programs?	[ ]	[ ]
Does the P&C have a strong influence/interest in outdoor, physical activity and nutrition policies?	[ ]	[ ]
Does the P&C acquire their funds mainly through donations?	[ ]	[ ]
Does the P&C acquire their funds mainly through fundraising?	[ ]	[ ]

Thank you for your assistance

APPENDIX - HIGH SCHOOL ENVIRONMENT QUESTIONNAIRE

NSW Schools Physical Activity and Nutrition Survey 2015

High School Environment Questionnaire

This questionnaire forms part of the 2015 NSW Schools Physical Activity and Nutrition Survey (SPANS. We will use the information in conjunction with the results of the student questionnaires and fitness assessments to attempt to identify the factors associated with student fitness and physical activity levels. The results will inform our efforts to improve student fitness and activity habits.

Please complete the questionnaire prior to the research team's visit to your school. It should take about 10 minutes of your time. Please feel free to discuss the questionnaire with any of your fellow teachers.

Your responses will be kept strictly confidential and the results will be published only in aggregate form. Thank you for your assistance.

Name of your school:____

How many teachers are employed at your school?___________________________
(include full-time, part-time, and casual)

How many specialist physical education teachers are employed at your school?_____

Is your school currently upgrading facilities in relation to providing physical activity opportunities for students? Yes [ ] No [ ]

1. Does your school have:

	Yes	No
Playground/quadrangle	[ ]	[ ]
Useable outdoor basketball/netball courts	[ ]	[ ]
Playing fields as part of the school grounds	[ ]	[ ]
Playing fields within reasonable walking distance	[ ]	[ ]
An indoor playing space (e.g., school hall) during wet/hot weather	[ ]	[ ]
A bike path near or around the school	[ ]	[ ]
Adequate sporting equipment, such as balls and bats	[ ]	[ ]

2. Are these facilities/equipment available to students for physical activity during recess and lunchtimes?

	N/A	Yes	No
Playground/quadrangle	[ ]	[ ]	[ ]
Useable outdoor basketball/netball courts	[ ]	[ ]	[ ]
Playing fields as part of the school grounds	[ ]	[ ]	[ ]
Playing fields within reasonable walking distance	[ ]	[ ]	[ ]
An indoor playing space (e.g., school hall) during wet/hot weather	[ ]	[ ]	[ ]
Sporting equipment, such as balls and bats	[ ]	[ ]	[ ]

3. How often are these facilities used by students for physical activity during recess and lunchtimes?

	N/A/ rarely	1-3 days/week	4-5 days week
Playground/quadrangle	[ ]	[ ]	[ ]
Useable outdoor basketball/netball courts	[ ]	[ ]	[ ]
Playing fields as part of the school grounds	[ ]	[ ]	[ ]
Playing fields within reasonable walking distance	[ ]	[ ]	[ ]
An indoor playing space (e.g., school hall) during wet/hot weather	[ ]	[ ]	[ ]
Sporting equipment, such as balls and bats	[ ]	[ ]	[ ]

4. In your view does your school have adequate green space for students to actively play?

[ ] Yes, the green space is adequate [...] No, the green space is not adequate

5. In your view, how adequate are the sports/PE <u>facilities</u> and <u>equipment</u> in your school?

	Facilities	Equipment
Poor, in need of much improvement	[ ]	[ ]
Fair, in need of some improvement	[ ]	[ ]
Good, in need of little improvement	[ ]	[ ]
Excellent	[ ]	[ ]

6. If sports/PE <u>facilities</u> and <u>equipment</u> in your school are poor or fair, would the principal consider funding for improvements?

Yes	No, there are other priorities	N/A (facilities and equipment are good or excellent)
[ ]	[ ]	[ ]

7. How many lessons and how much time is allocated for PE and sport each week?

	PE lessons			Sport lessons		
School year	N/A	Lessons per week	Minutes per lesson	N/A	Lessons per week	Minutes per lesson
Year 7	[ ]			[ ]		
Year 8	[ ]			[ ]		
Year 9	[ ]			[ ]		
Year 10	[ ]			[ ]		

8. Who generally teaches PE and sport in your school?

	PE	Sport
Specialist PDHPE teachers only	[ ]	[ ]
PDHPE staff plus a few teachers from other KLAs	[ ]	[ ]
Generalist teachers from a range of other faculties	[ ]	[ ]
Parents	[ ]	[ ]
Outside sporting groups or external contractors	[ ]	[ ]

9. In your school generally, how strong is support for

	Poor	Fair	Good
Sport?	[ ]	[ ]	[ ]
PE?	[ ]	[ ]	[ ]
PE and sport by PARENTS?	[ ]	[ ]	[ ]

10. Below are some barriers to enhancing skill development, fitness, and physical activity in children and adolescents. Please show how strongly you think each one applies to your school.

Barrier	Does not apply	Sometimes applies	Strongly applies
Competing demands on curriculum time	[ ]	[ ]	[ ]
Amount of equipment available	[ ]	[ ]	[ ]
Expertise of teachers	[ ]	[ ]	[ ]
Amount and standard of facilities	[ ]	[ ]	[ ]
Lack of wet/hot weather facilities	[ ]	[ ]	[ ]
Level of school/home/community interaction	[ ]	[ ]	[ ]
Motivation/attitude of members of staff to promote physical activity	[ ]	[ ]	[ ]
Absence of a quality PE or sport program	[ ]	[ ]	[ ]
Lack of interest from students	[ ]	[ ]	[ ]
The gender of students	[ ]	[ ]	[ ]
Cultural background of students	[ ]	[ ]	[ ]
Design of the girls' sports uniform			

11. Below is a list of approaches that schools can use to promote physical activity amongst their students. Please indicate at what level these approaches exist at your school.

Approaches	Never /rarely	Sometimes	Usually
Encouraging walking or bicycling to school	[ ]	[ ]	[ ]
Encouraging students to be more active outside school	[ ]	[ ]	[ ]
Encouraging the use of equipment and facilities *during* school hours	[ ]	[ ]	[ ]
Encouraging the use of equipment and facilities *before* school	[ ]	[ ]	[ ]
Encouraging the use of equipment and facilities *after* school	[ ]	[ ]	[ ]
Encouraging staff members to be involved in lunchtime physical activity programs	[ ]	[ ]	[ ]
Remedial motor skills programs for students	[ ]	[ ]	[ ]
Permitting community organisations to use facilities for physical activity outside school hours	[ ]	[ ]	[ ]
Involving students in decision-making regarding the sports and physical activities they participate in and the use and maintenance of facilities and equipment	[ ]	[ ]	[ ]
Encouragement/merit award	[ ]	[ ]	[ ]
Communication to parents regarding the importance of physical activity in children	[ ]	[ ]	[ ]
Physical activity included in PDHPE scope and sequence	[ ]	[ ]	[ ]
School Plan includes promoting physical activity to students	[ ]	[ ]	[ ]
Leadership programs for older students to encourage physical activity with younger students	[ ]	[ ]	[ ]

12. Does your school

	Yes	No	No, but would like to
Include healthy eating in PDHPE scope and sequence?	[ ]	[ ]	[ ]
Address healthy eating in the School Plan?	[ ]	[ ]	[ ]
Have healthy fundraising options?	[ ]	[ ]	[ ]
Encourage the provision of healthy food and drinks to students for activities including excursions, camps, sport carnivals and other school functions?	[ ]	[ ]	[ ]
Promote and model healthy eating during school activities involving the wider community, including school fetes and school functions?	[ ]	[ ]	[ ]
Communicate to parents the importance of healthy eating?	[ ]	[ ]	[ ]

13. Does your school:

	Yes	No	No, but would like to
Have a canteen?	[ ]	[ ]	[ ]
Have a canteen manager?	[ ]	[ ]	[ ]
Address healthy canteens in the School Plan?	[ ]	[ ]	[ ]
Have a Healthy School Canteen Strategy?	[ ]	[ ]	[ ]

14. P&C and fundraising

	Yes	**No**
Does your school have an active P&C?	[ ]	[ ]
Is the school dependent on fundraising (or external funds) to pay for upgrades to outdoor (play) spaces, such as gardens, play equipment, shade cloths, etc.?	[ ]	[ ]
Is the school dependent on fundraising to pay for specialist sport programs or dedicated PE teachers?	[ ]	[ ]
Is the P&C actively involved in fundraising for play spaces / sport programs?	[ ]	[ ]
Does the P&C have a strong influence/interest in outdoor policies, physical activity and nutrition?	[ ]	[ ]
Does the P&C acquire their funds mainly through donations?	[ ]	[ ]
Does the P&C acquire their funds mainly through fundraising?	[ ]	[ ]

Thank you for your assistance